38
4

STATE OF NEW YORK

PUBLIC SERVICE COMMISSION

FOR THE FIRST DISTRICT

Whitehall Street–East River–Montague Street Rapid Transit Railroad

Route No. 33

SECTION No. 2–Whitehall Street, East River, Montague Street to Clinton Street

1914

CONTRACT DRAWINGS CONTAINED HEREIN

ROUTE No. 33,	A-2 to 4
SECTION No. 2:	B-288, 289, 298, 305 to 307
	C-1 to 38, 1001

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Mining Engineering
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A–3	Profile of grades and track alignment.
A–4	Profile of grades and track alignment.
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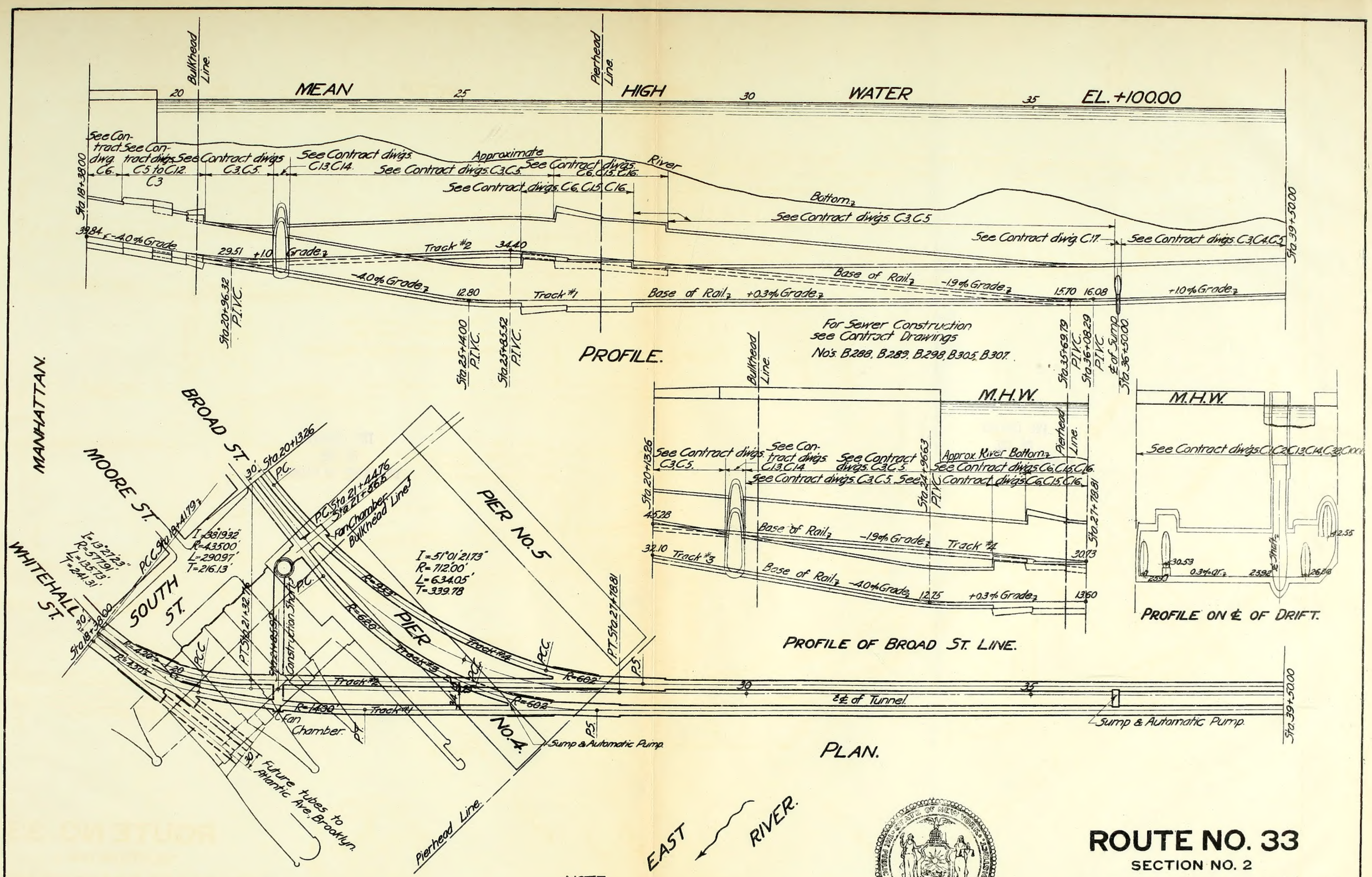
B–307	Plan of new sewers, detail of overflow at South and Broad Streets.

563876



PLAN.

NOTE:
Splicing chambers 10'-0" long, spaced about 300' centre to centre, to be provided in duct benches.

ROUTE NO. 33

SECTION NO. 2

CONTRACT DRAWING NO. A-2

DATE MARCH 14, 1914

CHIEF ENGINEER

SCALES: HORIZONTAL 0 40 80 FEET
VERTICAL 0 10 20 FEET

DRAWN BY C.A.McC.
CHECKED BY E.Bie

64469

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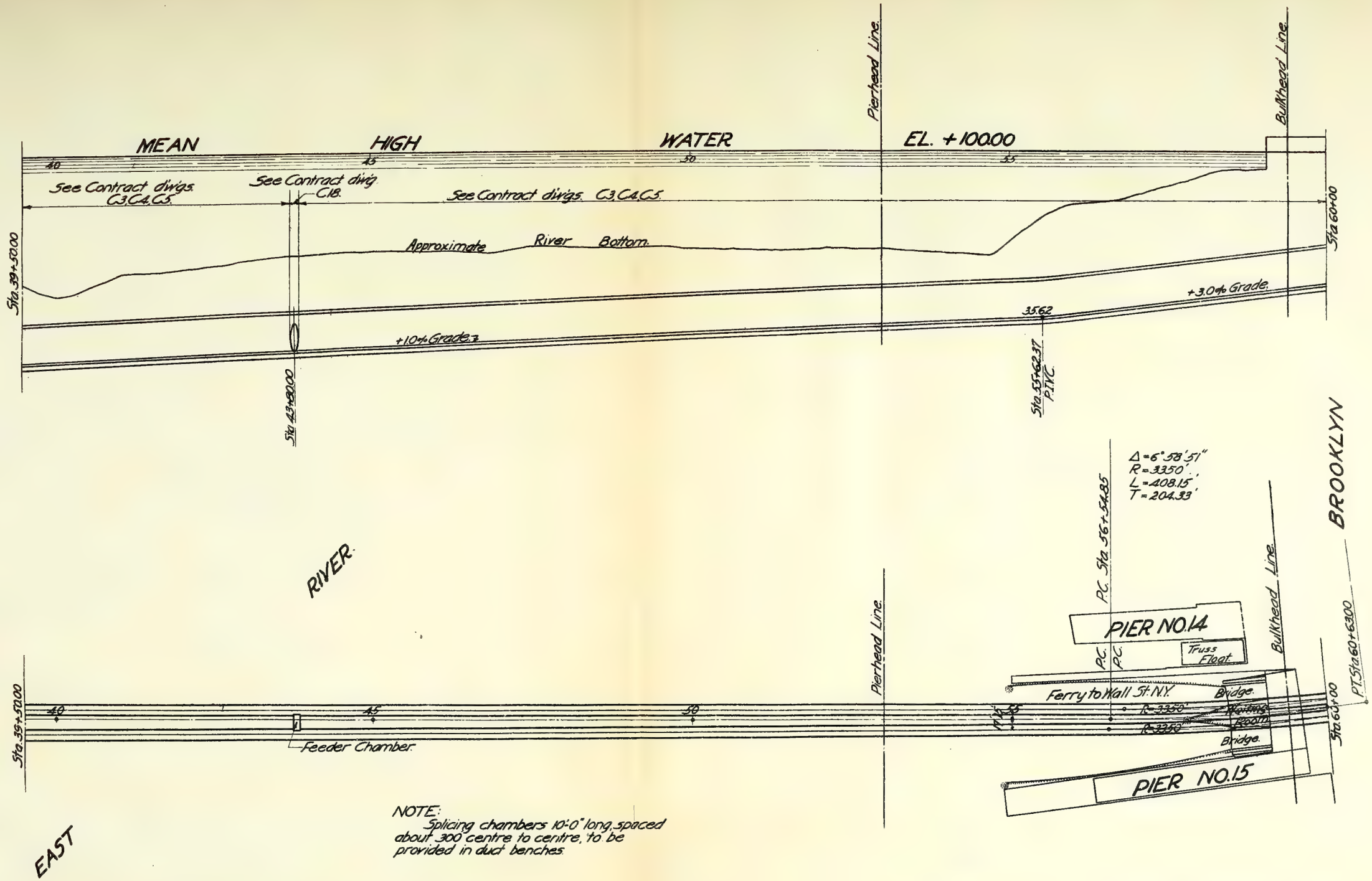

NOTE:
Splicing chambers 10'-0" long, spaced about 300' centre to centre, to be provided in duct benches.

ROUTE NO. 33

SECTION NO. 2

CONTRACT DRAWING NO. A-3

DATE MARCH 14, 1914

CHIEF ENGINEER

SCALES: HORIZONTAL 0 40 80 FEET
VERTICAL 0 10 20 FEET

DRAWN BY C.A.M.-C.
CHECKED BY E.B.G.

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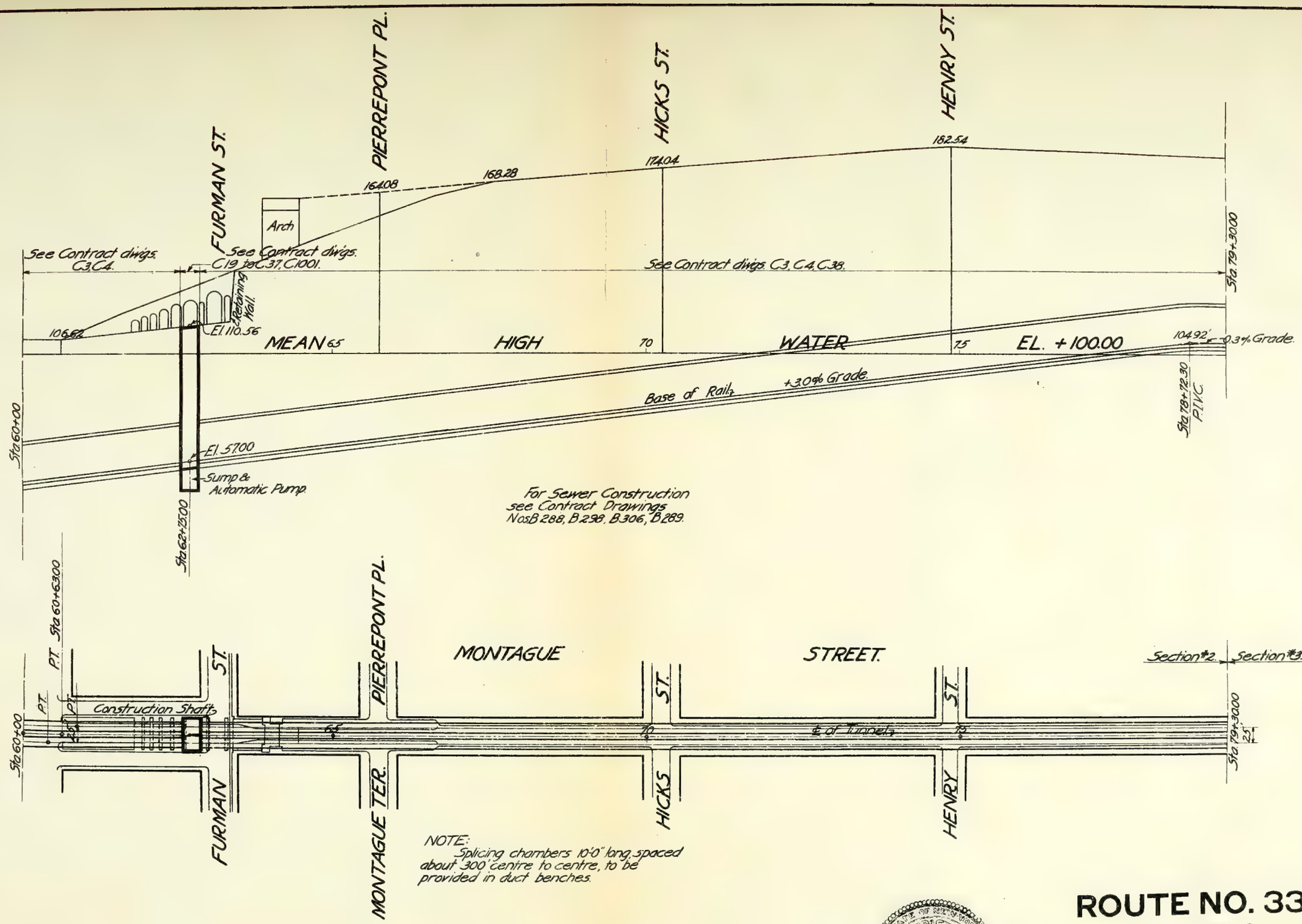

ROUTE NO. 33

SECTION NO. 2

CONTRACT DRAWING NO. A-4

DATE MARCH 14, 1914

CHIEF ENGINEER

SCALES: HORIZONTAL 0 40 80 FEET; VERTICAL 0 10 20 FEET

DRAWN BY C.A.McG.

CHECKED BY E.Bie

64458

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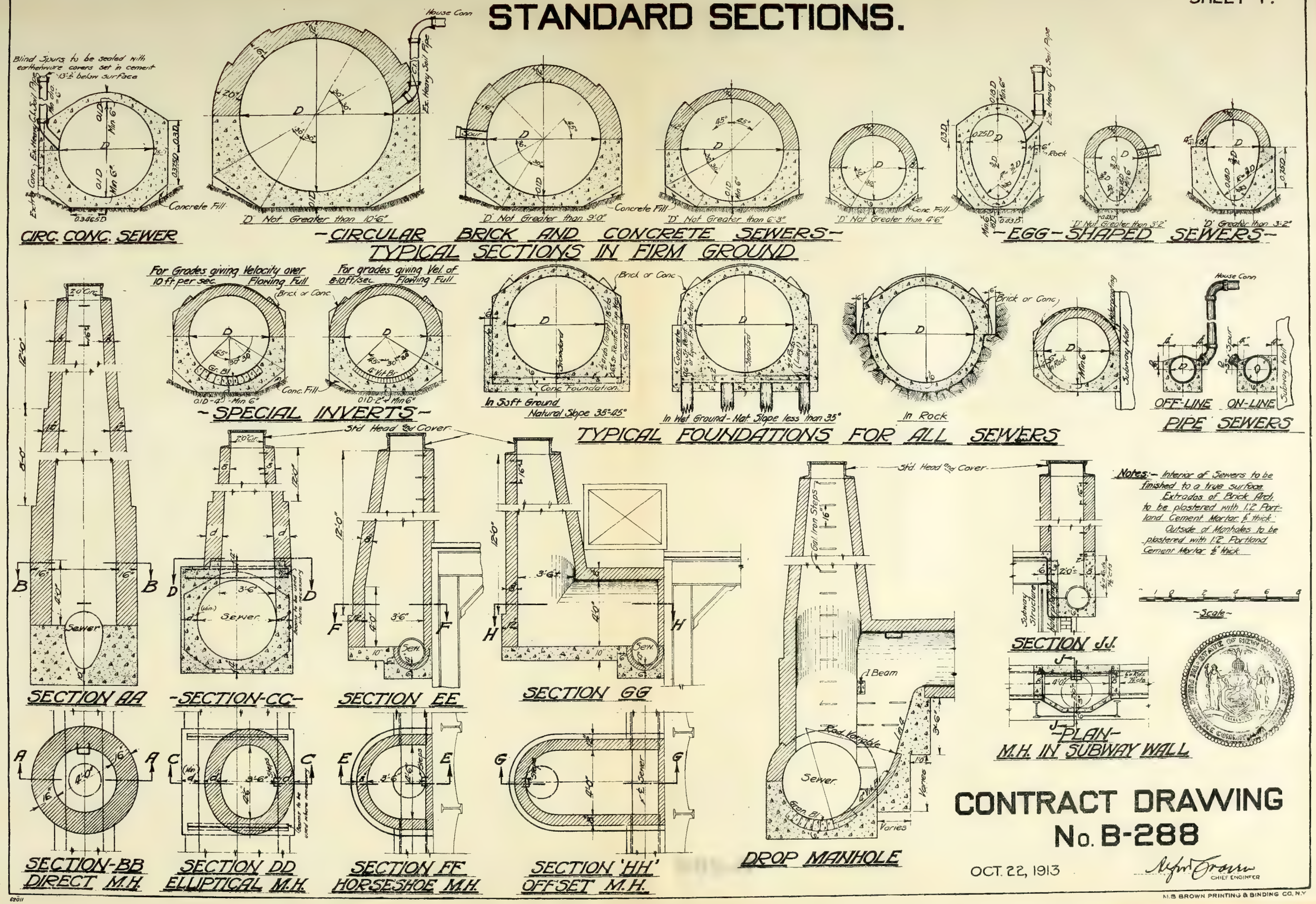
SHEET 1.

STANDARD SECTIONS.



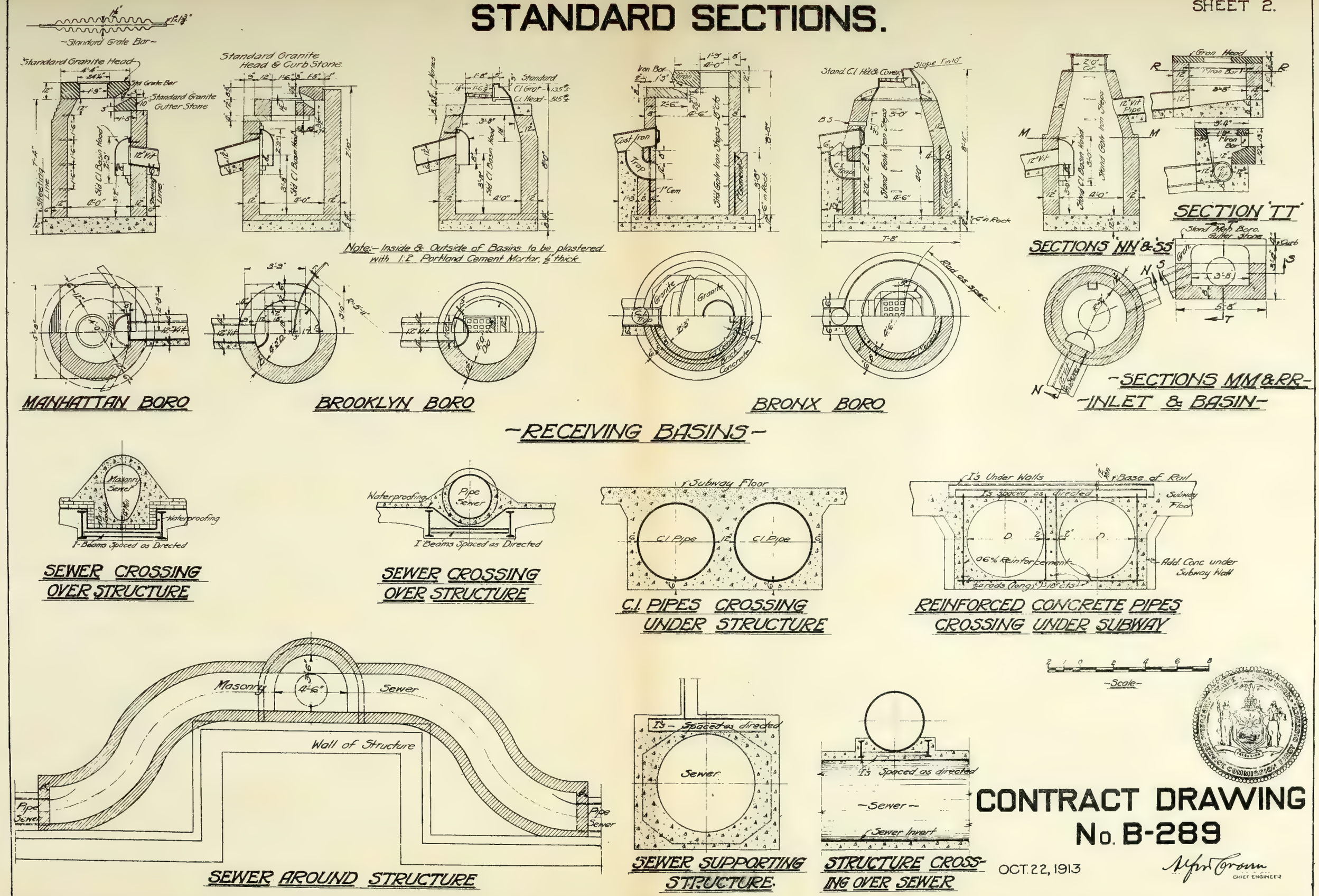
CONTRACT DRAWING
No. B-288

OCT. 22, 1913

Alfred Craven
CHIEF ENGINEER

M.B. BROWN PRINTING & BINDING CO. N.Y.

STANDARD SECTIONS.



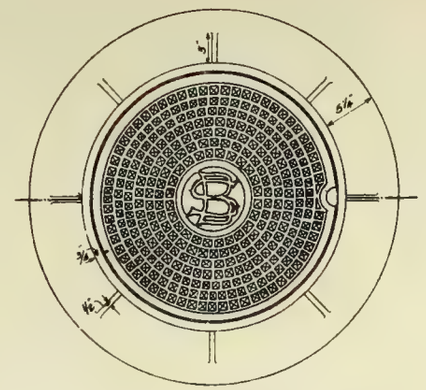
CONTRACT DRAWING
No. B-289

OCT. 22, 1913

Alfred Brown
CHIEF ENGINEER

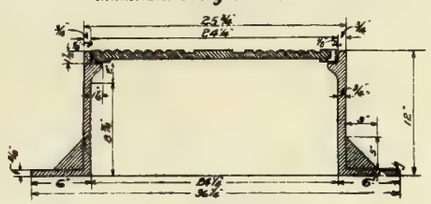
M.B. BROWN PRINTING & BINDING CO. N.Y.

STANDARD CASTINGS
FOR SEWERS.



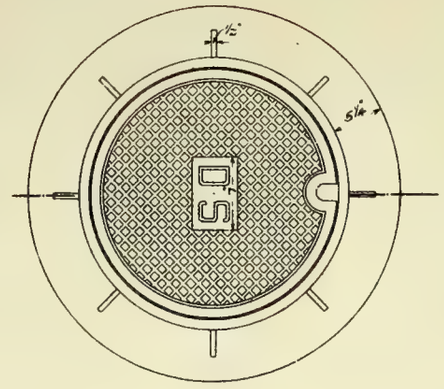
PLAN

Minimum Weight of Cover 90#

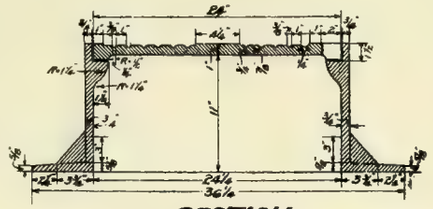


SECTION

M.H. HEAD & COVER FOR SIDEWALK

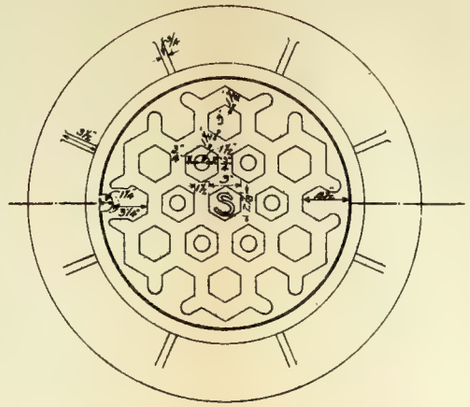


PLAN

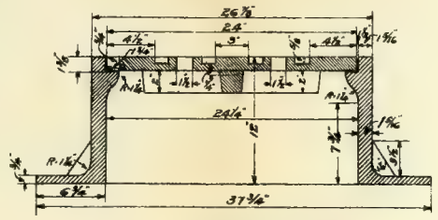


SECTION

M.H. HEAD & COVER FOR SIDEWALK



PLAN



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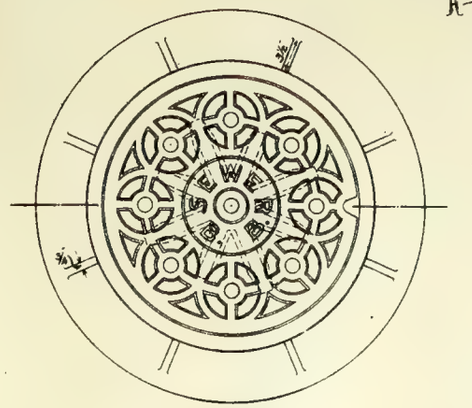

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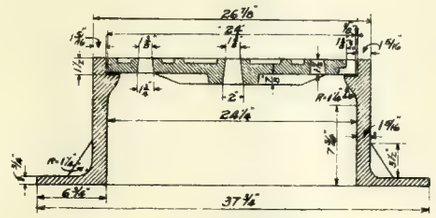

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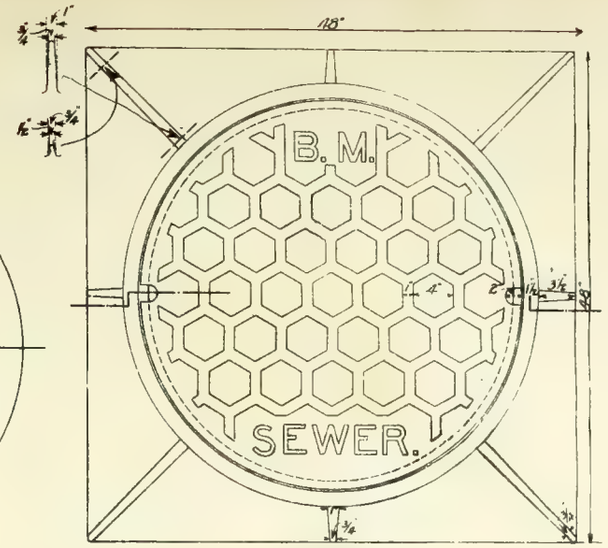
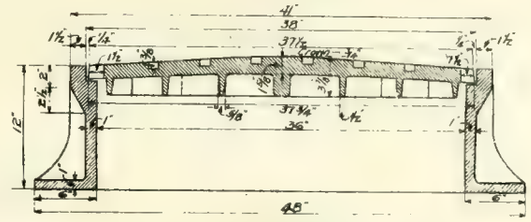


PLAN



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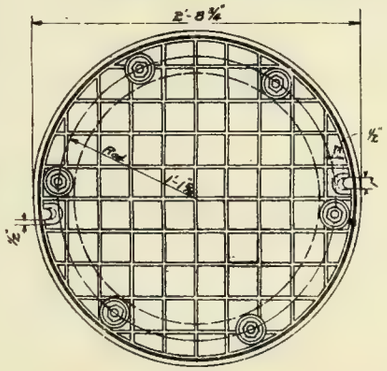
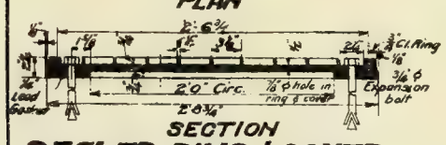
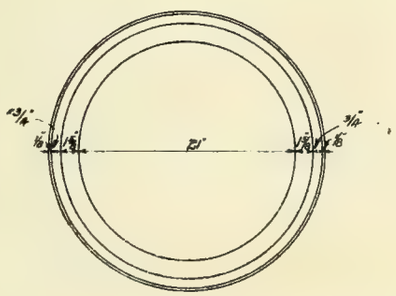


PLAN



SECTION

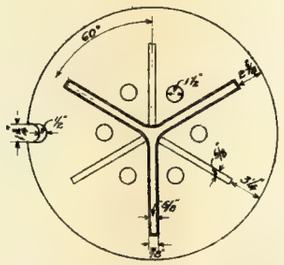
SEALED RING & COVER FOR STATION PLATFORM



PLAN

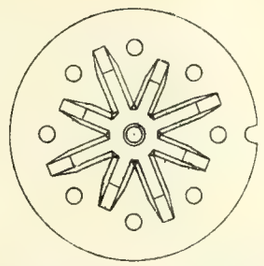
SECTION

M.H. RING



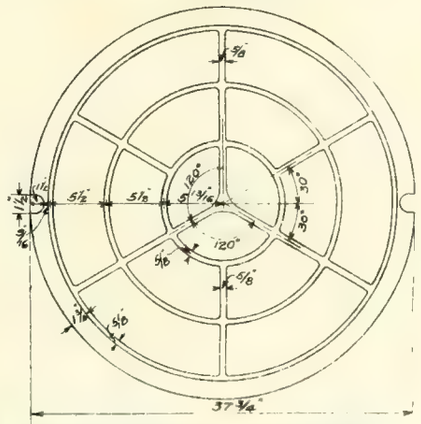
PLAN OF COVER INVERTED

M.H. HEAD & COVER FOR STREET



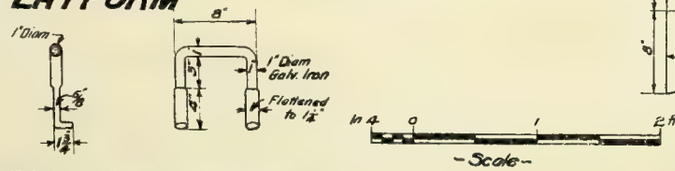
PLAN OF COVER INVERTED

M.H. HEAD & COVER FOR STREET

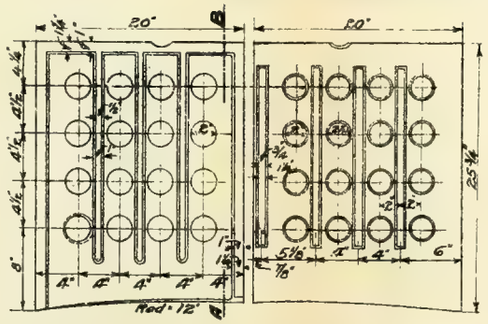


PLAN OF COVER INVERTED

M.H. HEAD & COVER FOR STORM SEWERS

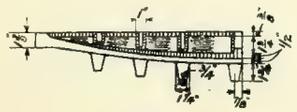


STEP FOR MANHOLES



TOP VIEW BOTTOM VIEW

SECTION-AB



END VIEW

IRON GRATING FOR STREET BASIN

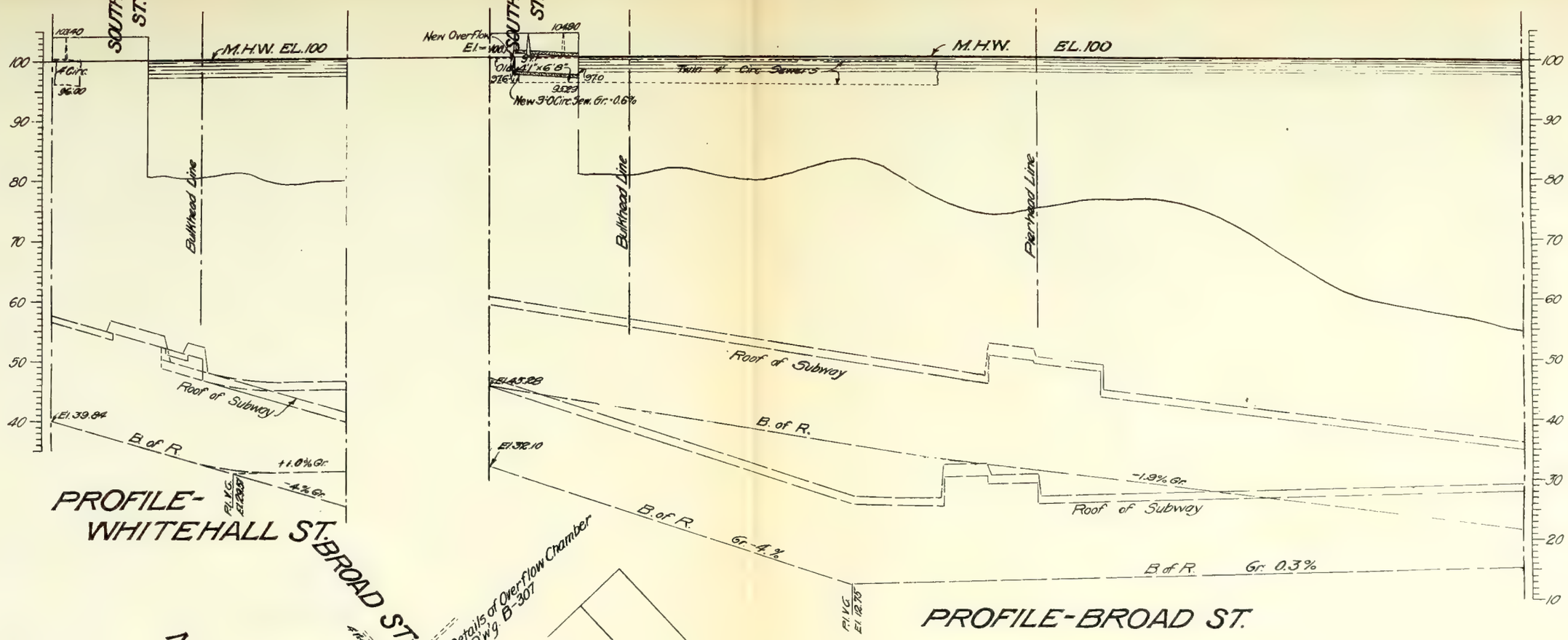
CONTRACT DRAWING
No. B-298

FEB. 2, 1914

Alfred Craven
CHIEF ENGINEER

DRAWN BY - K.D. Strange
CHECKED BY - W.G. Golden

61998



Note: All existing sewers to be retained, are to be rebuilt if disturbed and no payment will be made for same.

Drawn by L.S.
Checked by J.D.L. (H.G.S.)

ROUTE No. 33

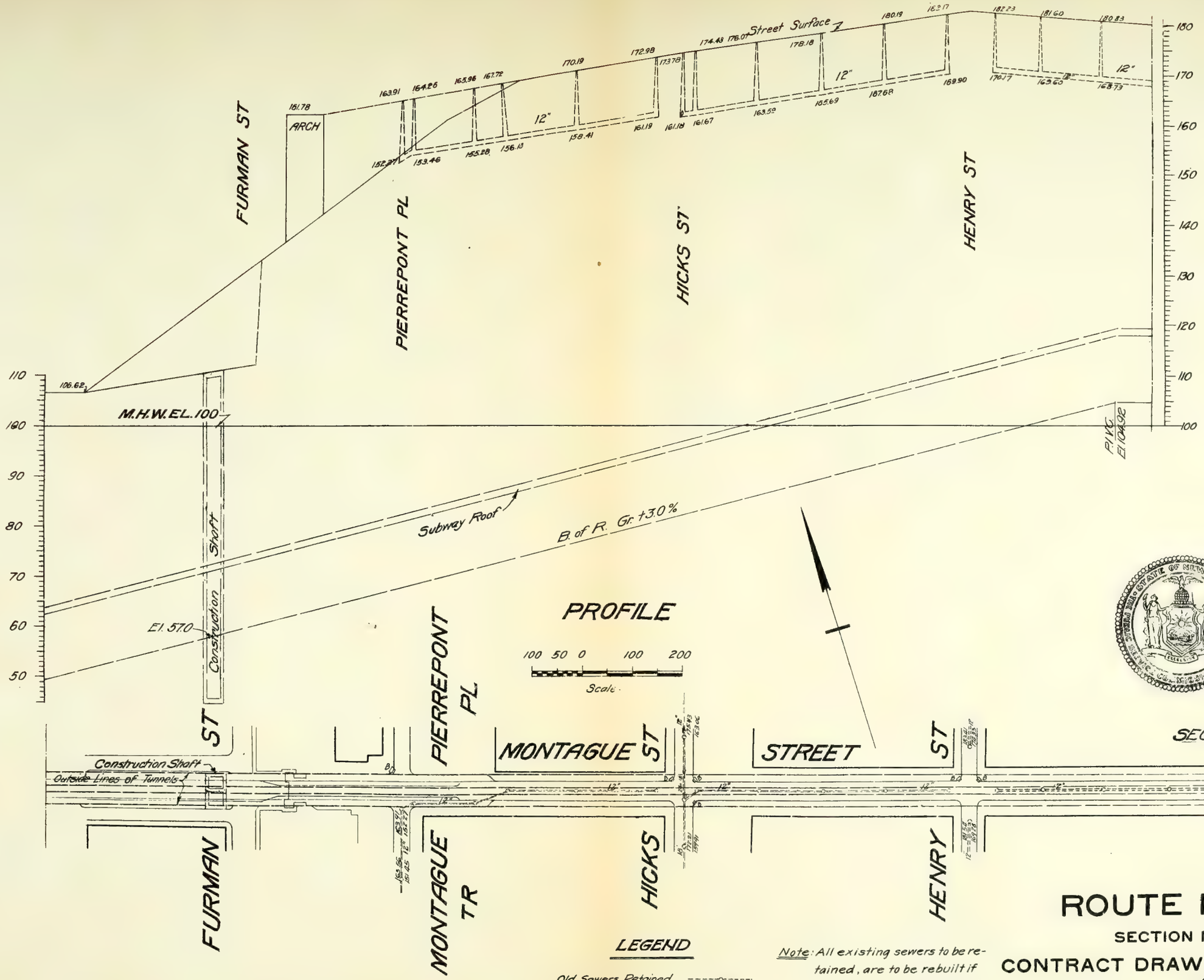
SECTION NO. 2

CONTRACT DRAWING NO. B-305

DATE- MAR. 14, 1914

CHIEF ENGINEER

M.B. BROWN PRINTING & BINDING CO. N.Y.



Note: All existing sewers to be retained, are to be rebuilt if disturbed and no payment will be made for same.

ROUTE No. 33

SECTION NO. 2

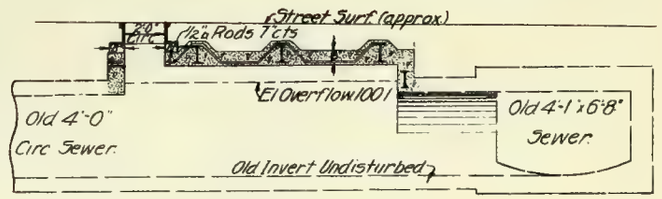
CONTRACT DRAWING NO. B-306

DATE- MAR. 14, 1914

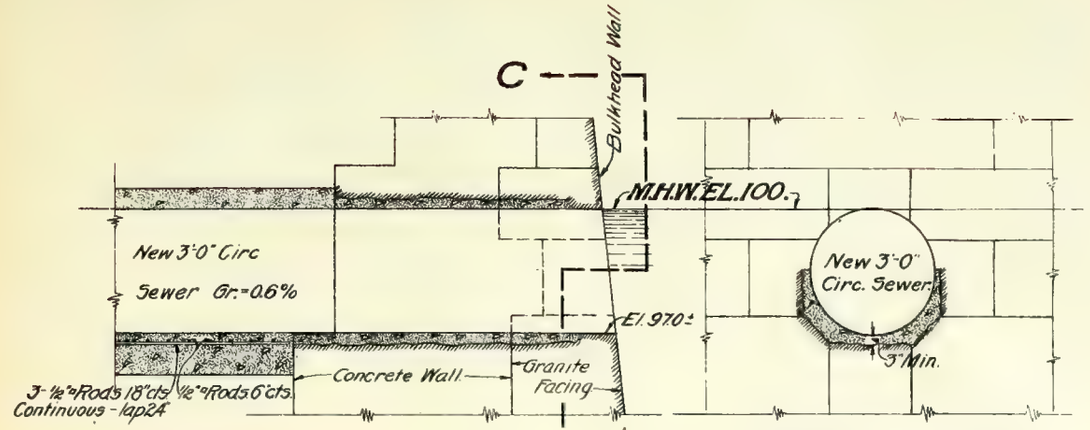
Alfred Craven
CHIEF ENGINEER

Drawn by A.S.
Checked by I.D.L.

M.B. BROWN PRINTING & BINDING CO. N.Y.

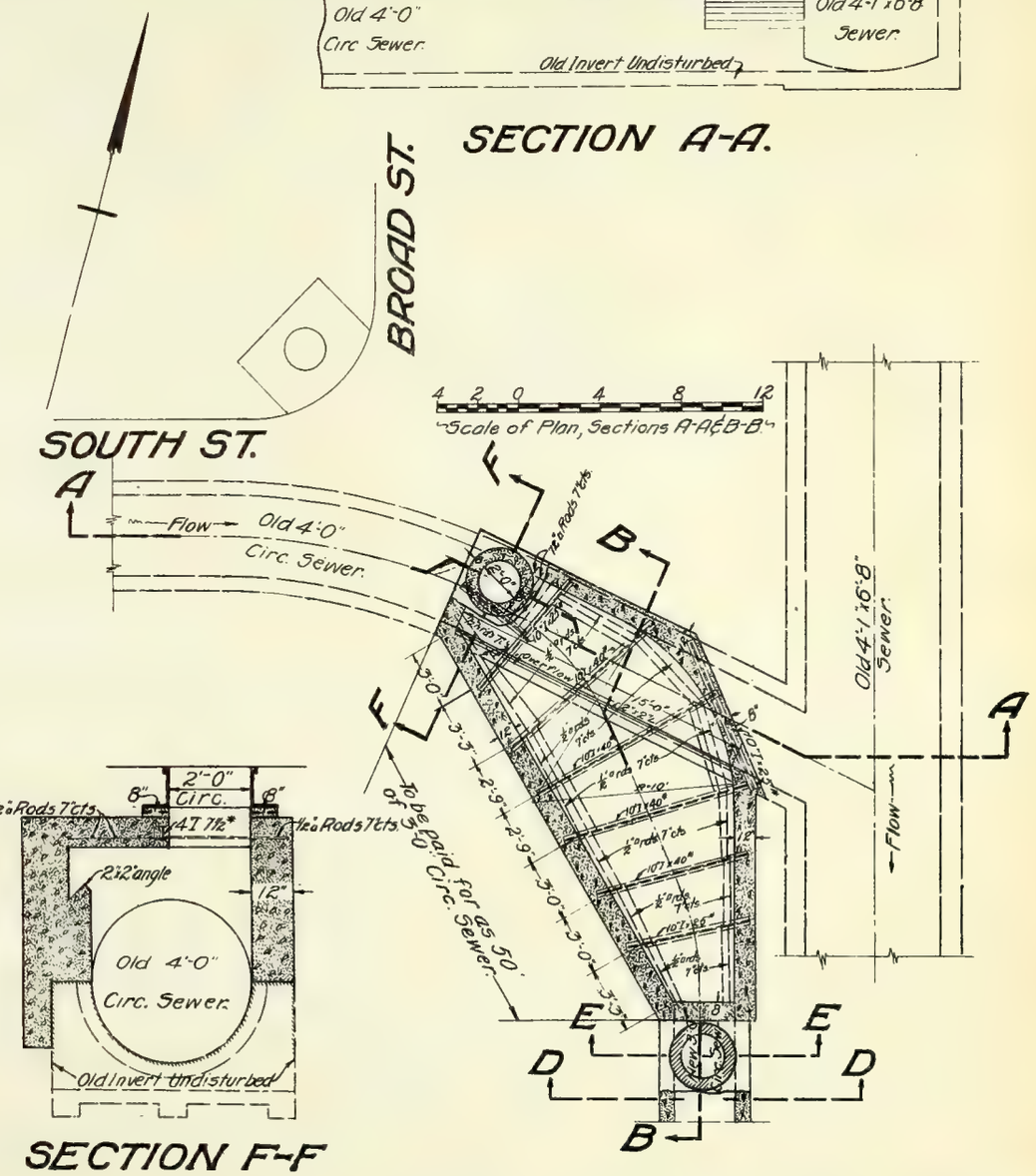


SECTION A-A.



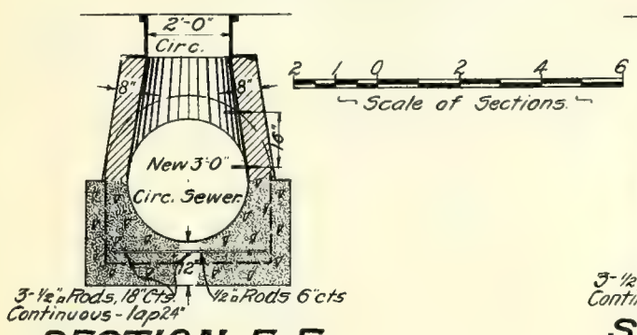
SECTION C-C

LONG. SECTION OF OUTLET
AT BULKHEAD WALL.

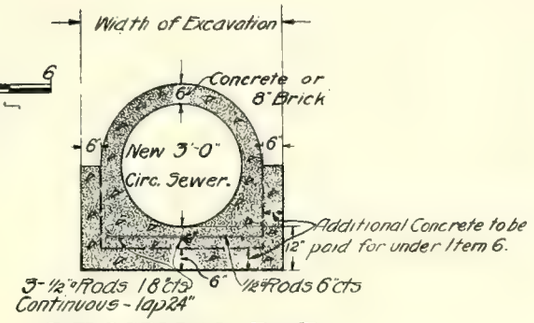


SECTION F-F

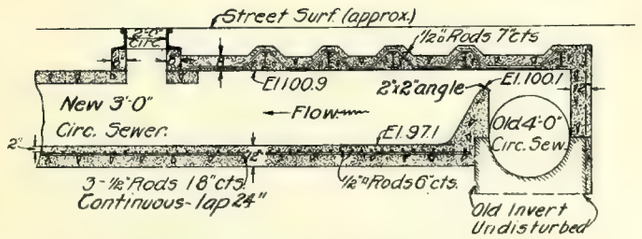
PLAN OF OVERFLOW CHAMBER.



SECTION E-E



SECTION D-D



SECTION B-B

Notes:
All existing sewers to be retained are to be rebuilt if disturbed and no payment will be made for same.
Price per lin ft of sewer will include all material and labor applicable thereto, excepting steel rods and beams, which will be paid for at the stipulated rates for these items.

For Plan and Profile see Sheet B305

ROUTE No. 33

SECTION NO. 2

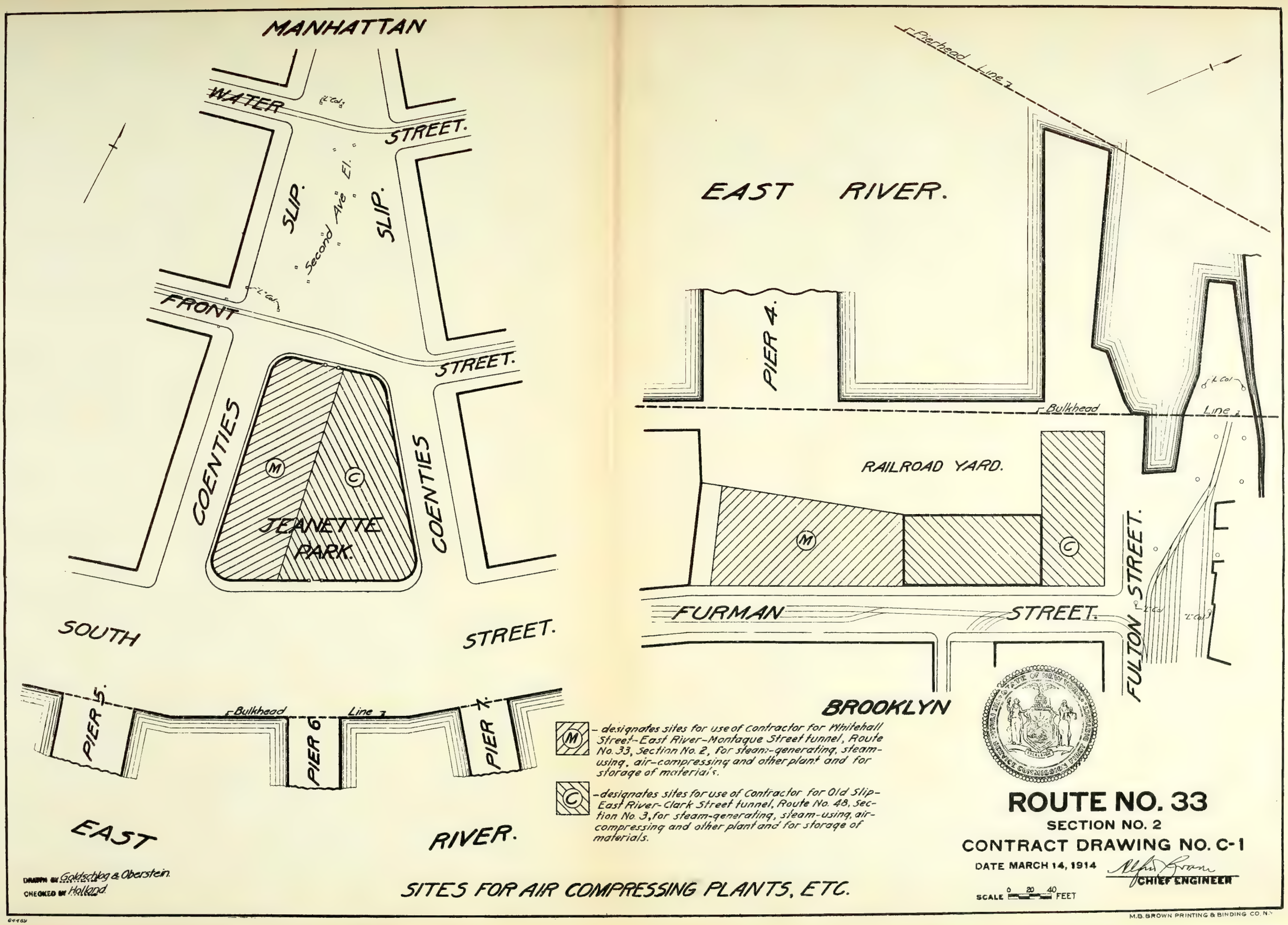
CONTRACT DRAWING NO. B-307

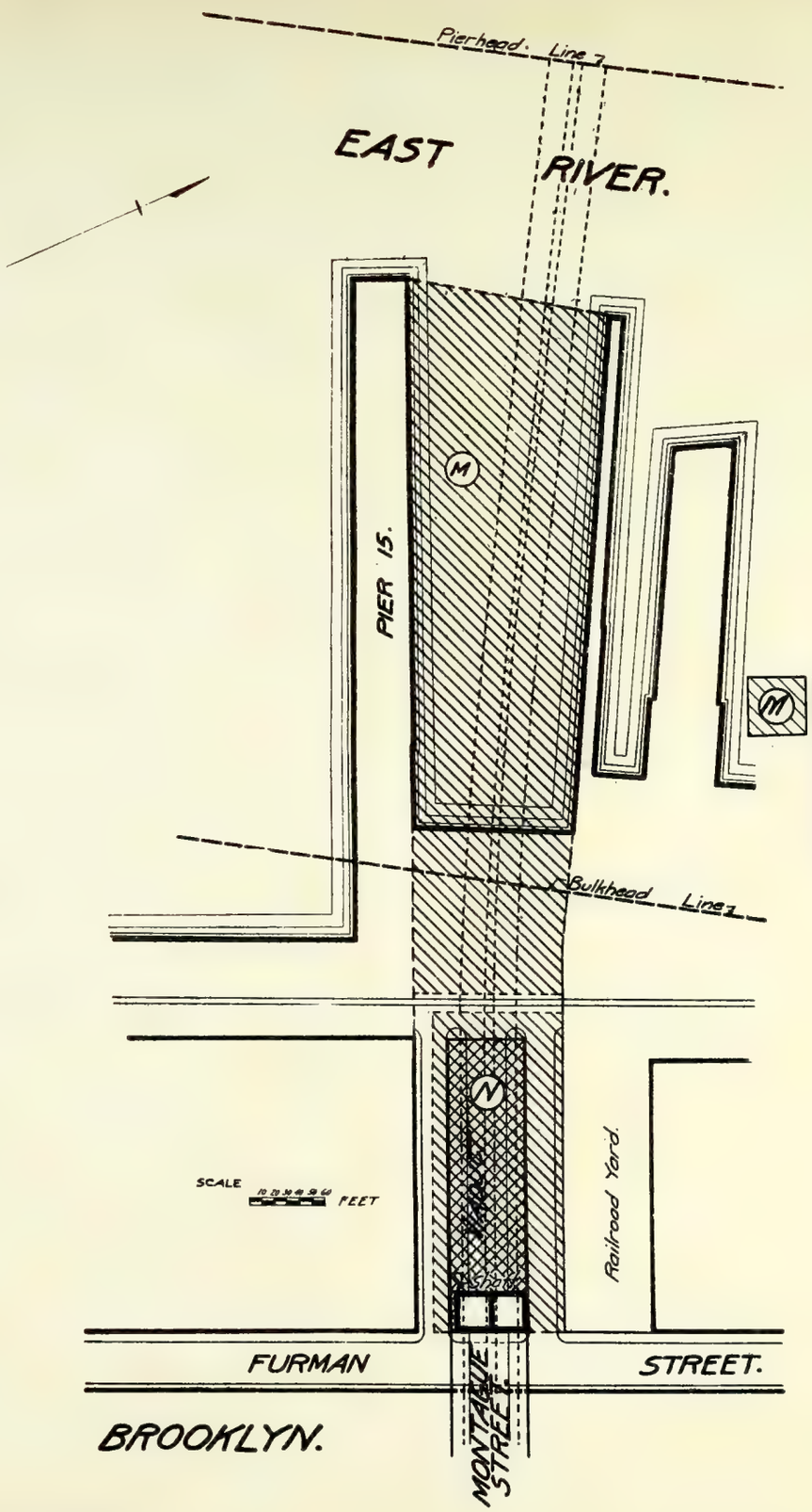
DATE- MAR. 14, 1914

CHIEF ENGINEER

Drawn by W.W.P.
Checked by I.D.L.
(K'94)

M.B. BROWN PRINTING & BINDING CO., N.Y.

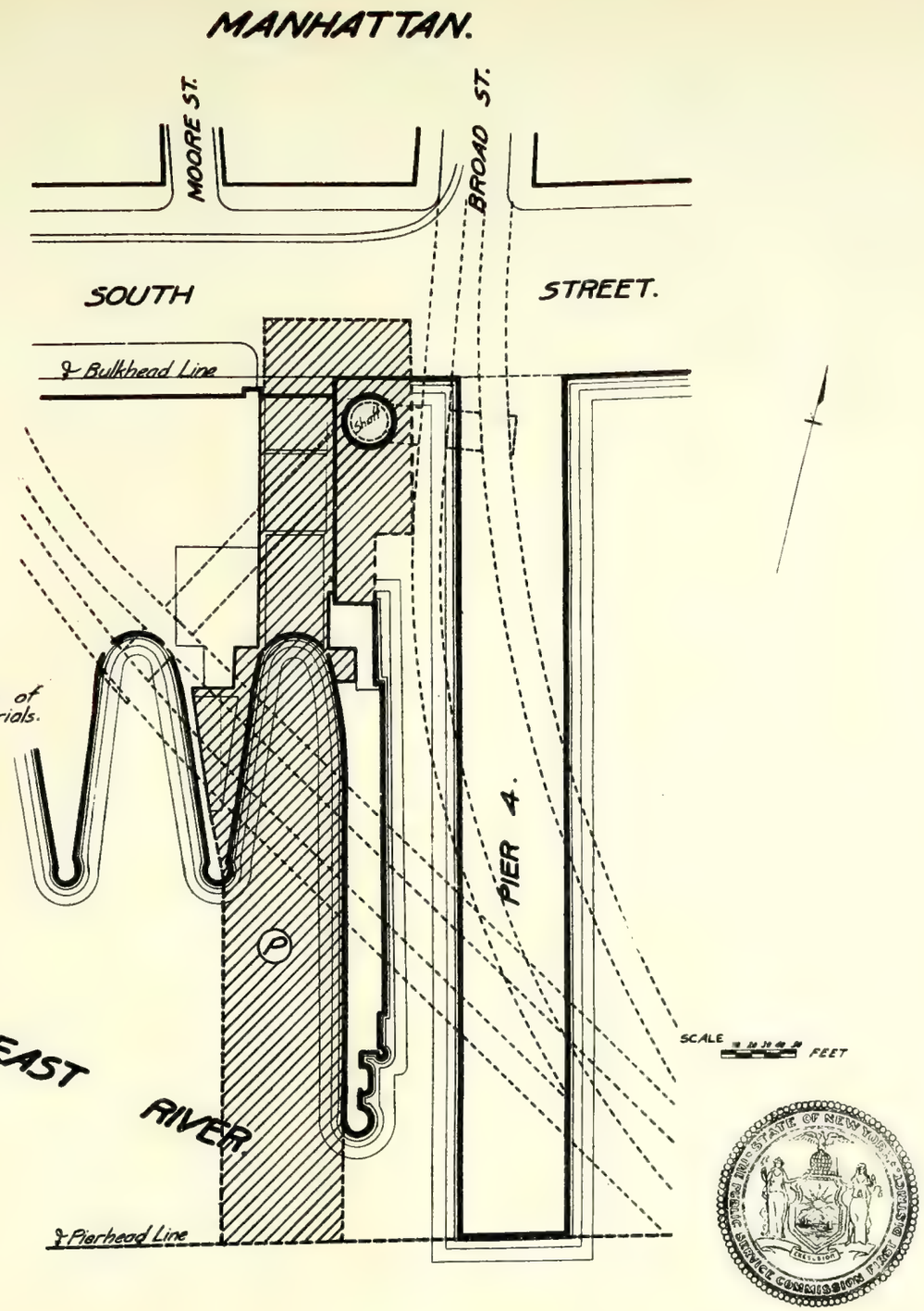

MANHATTAN
WATER STREET.
SLIP.
"Second" Ave El.
SLIP.
FRONT STREET.
COENTIES
COENTIES
JEANETTE PARK.
SOUTH STREET.
PIER 5.
Bulkhead Line
PIER 6
PIER 7.
EAST RIVER.
Pierhead Line
EAST RIVER.
PIER 4.
Bulkhead Line
RAILROAD YARD.
FURMAN STREET.
FULTON STREET.
BROOKLYN
M - designates sites for use of contractor for Whitehall Street-East River-Montague Street tunnel, Route No. 33, Section No. 2, for steam-generating, steam-using, air-compressing and other plant and for storage of materials.
C - designates sites for use of Contractor for Old Slip-East River-Clark Street tunnel, Route No. 48, Section No. 3, for steam-generating, steam-using, air-compressing and other plant and for storage of materials.
ROUTE NO. 33
SECTION NO. 2
CONTRACT DRAWING NO. C-1
DATE MARCH 14, 1914
CHIEF ENGINEER
SCALE 0 20 40 FEET
DRAWN BY Goldschlag & Oberstein.
CHECKED BY Holland.
SITES FOR AIR COMPRESSING PLANTS, ETC.
M.B. BROWN PRINTING & BINDING CO. N.Y.



M designate slip and property for shaft, plant and for removal, receipt & storage of materials.

N designates area including viaduct.

P designates ferry property and bulkhead, and portion of slip appurtenant thereto for shaft and plant and for removal, receipt and storage of materials.



WATER FRONT PROPERTIES AND SITES FOR SHAFT AND PLANT.

ROUTE NO. 33

SECTION NO. 2

CONTRACT DRAWING NO. C-2

DATE MARCH 14, 1914

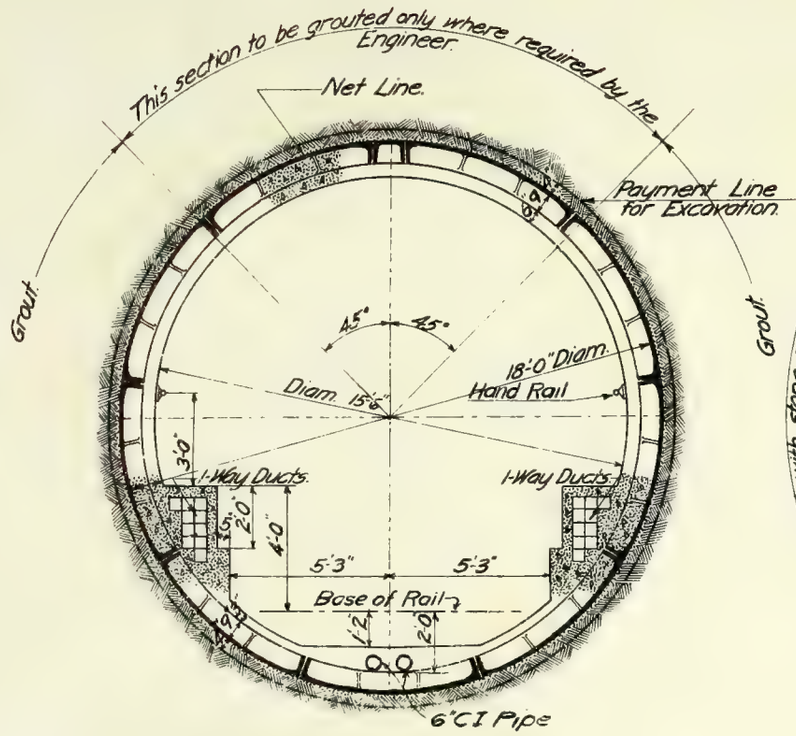
CHIEF ENGINEER

SCALE FEET

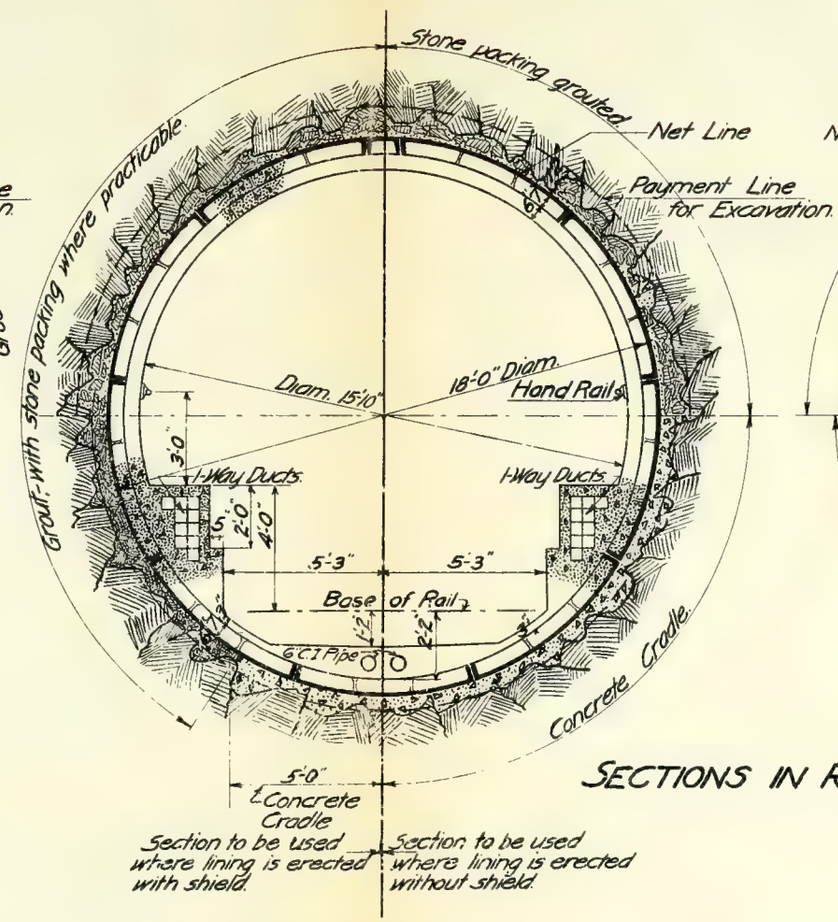
DRAWN BY D. Oberstein

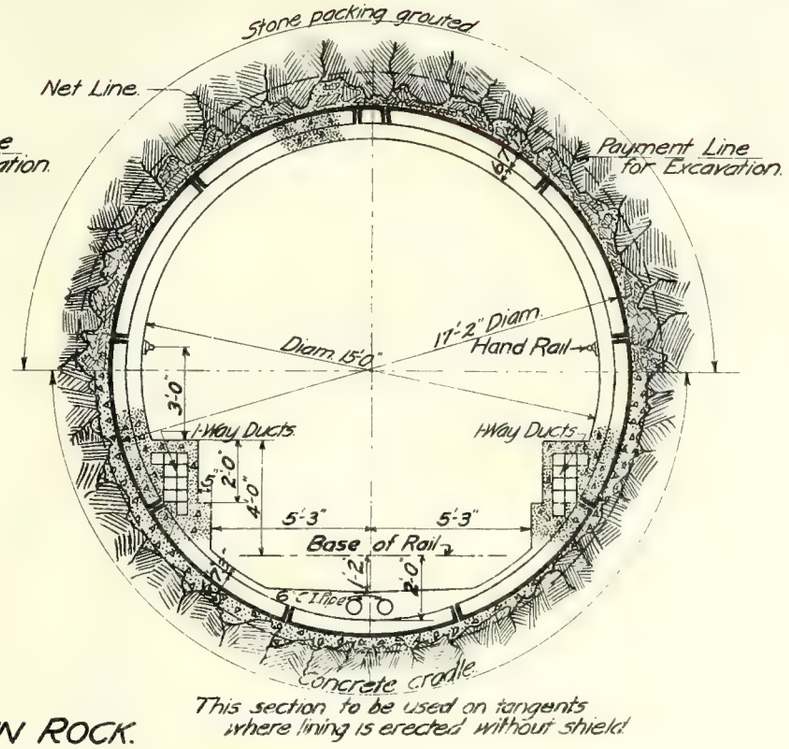
CHECKED BY C.M. Holland

M.B. BROWN PRINTING & BINDING CO. N.Y.



SECTION IN EARTH.





SECTIONS IN ROCK.

This section to be used on tangents where lining is erected without shield.

CAST IRON RINGS.

REFERENCE NOTES.

For Detail of Sections in Rock see drawing No. C-5
" " " Section " Earth " " " C-4

ROUTE NO. 33

SECTION NO. 2

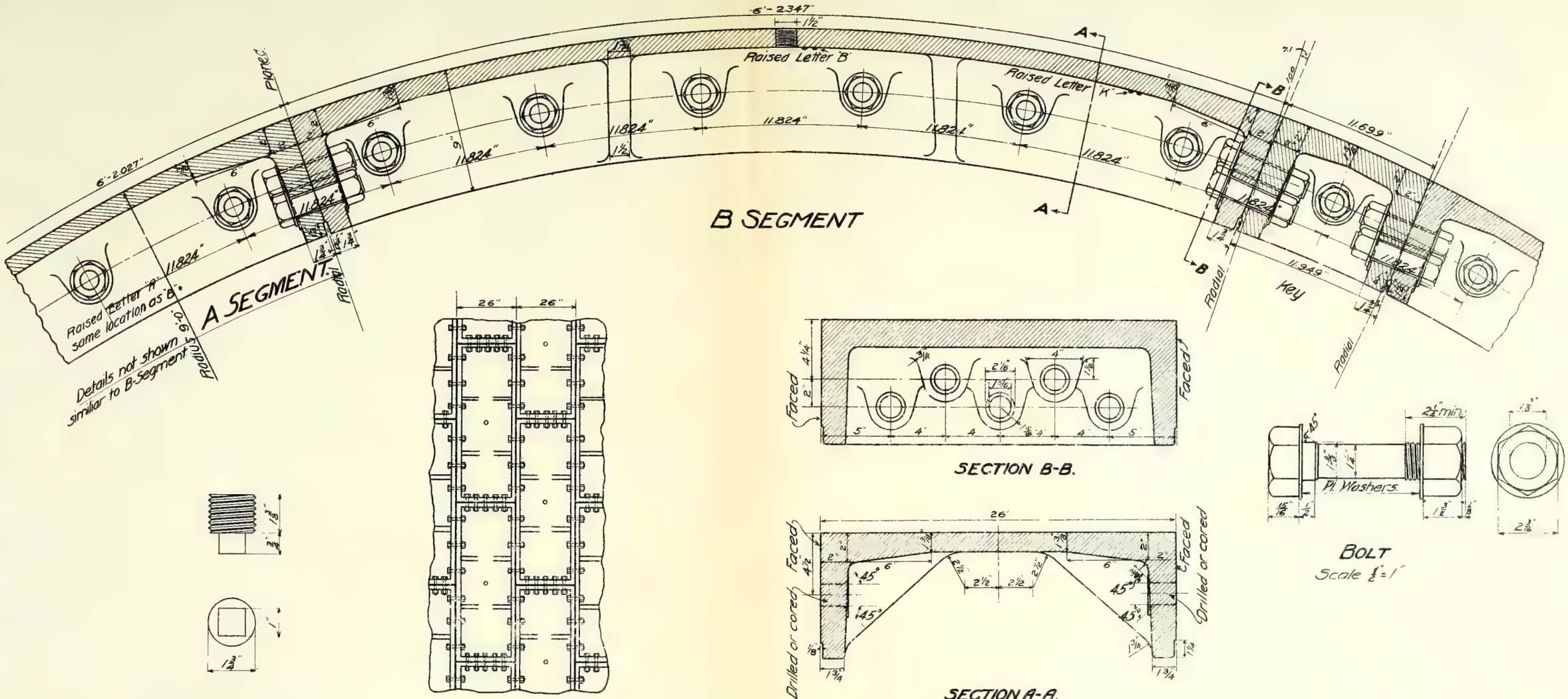
CONTRACT DRAWING NO. C-3

DATE MARCH 14, 1914. Alfred Brown
CHIEF ENGINEER

SCALE: 0 1 2 3 FEET

DRAWN BY Palmer
CHECKED BY C.A. McC.

M.B. BROWN PRINTING & BINDING CO.



DETAILS OF CAST IRON RING IN EARTH

ROUTE NO. 33

SECTION NO. 2

CONTRACT DRAWING NO. C-4

DATE MARCH 14, 1914

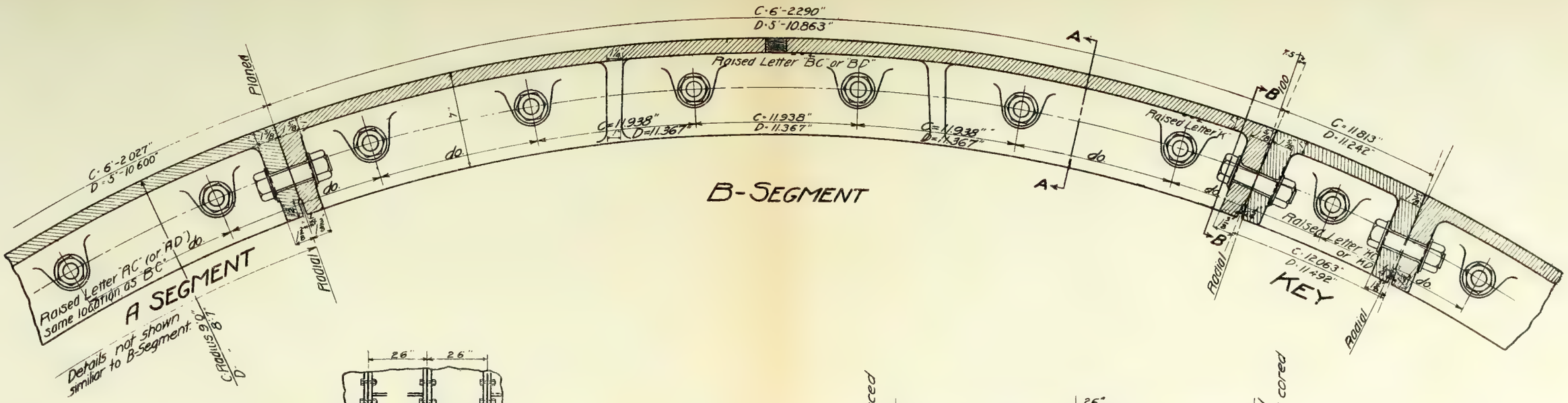
Alfred Brown
CHIEF ENGINEER

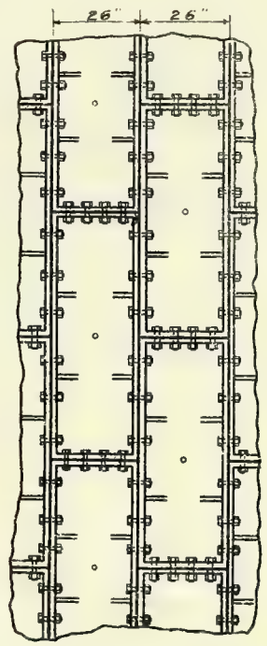
SCALE: 0 2 4 6 INCHES; 0 1 2 3 FEET; INCHES

DRAWN BY Palmer
CHECKED BY M.G.

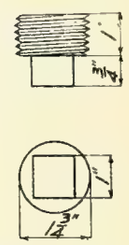
64469

M.B. BROWN PRINTING & BINDING CO. N.Y.

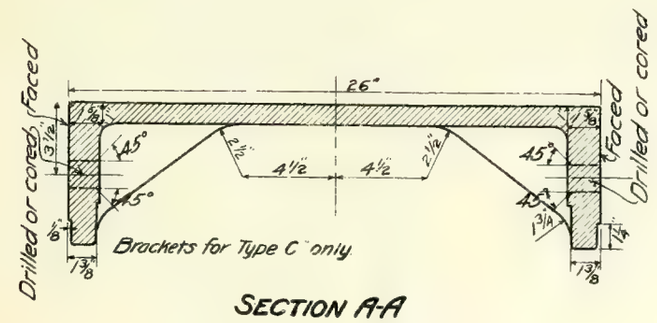




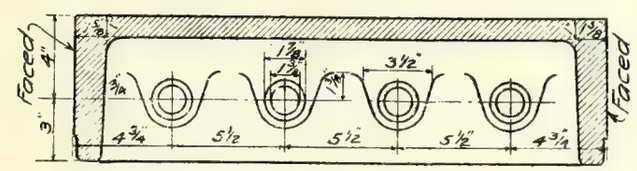
SIDE VIEW



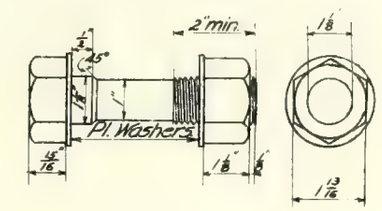
SCREW GROUT PLUG
(Bolt Thread).



SECTION A-A



SECTION B-B



BOLT
Scale ½" = 1"

DETAILS OF CAST IRON RINGS IN ROCK.

C for lining erected behind shield
D " " not " " "

ROUTE NO. 33

SECTION NO. 2

CONTRACT DRAWING NO. C-5

DATE MARCH 14, 1914

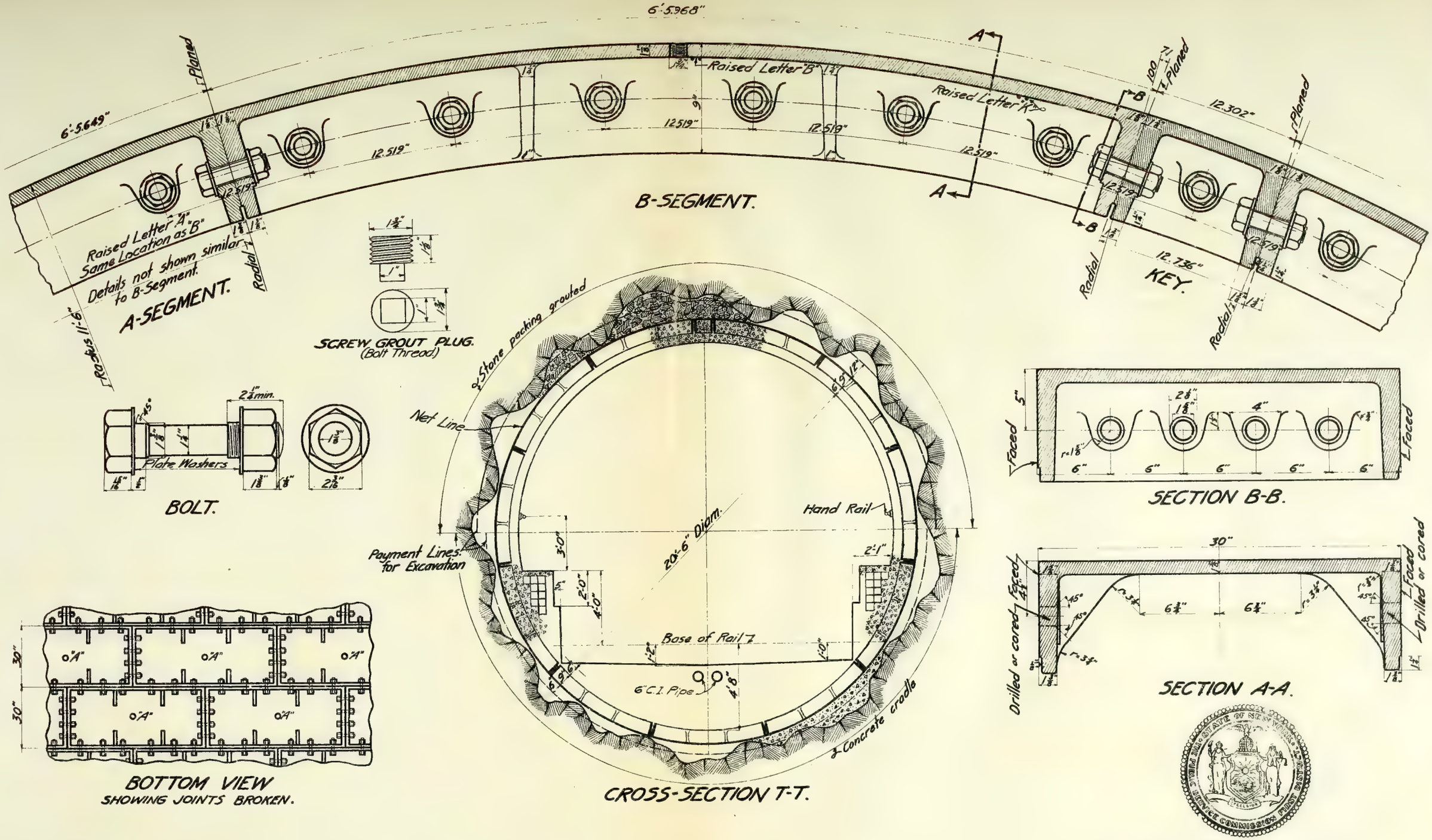
CHIEF ENGINEER

SCALE: 0 2 4 6 INCHES; 0 1 2 3 FEET; INCHES

DRAWN BY Palmer
CHECKED BY M.G.C.

64468

M.B. BROWN PRINTING & BINDING CO. N.Y.



ROUTE NO. 33

SECTION NO. 2

CONTRACT DRAWING NO. C-6

DATE MARCH 14, 1914

CHIEF ENGINEER

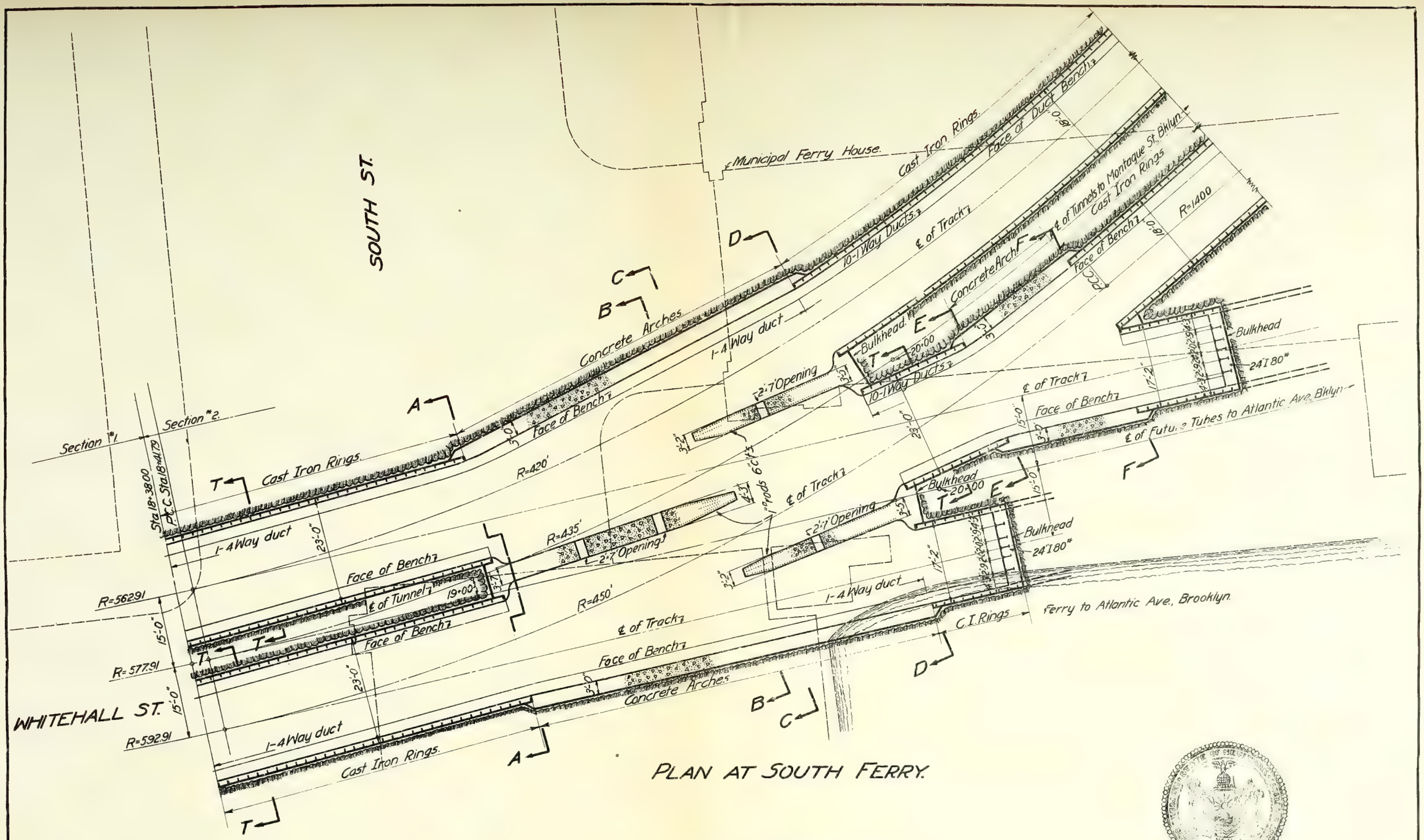
SCALE — INCHES — FEET

DRAWN BY N. Goldschlag

CHECKED BY C.M. Holland

64469

M.B. BROWN PRINTING & BINDING CO. N.Y.



PLAN AT SOUTH FERRY.

REFERENCE NOTES.

For Section A-A, see Drawing No. C-8
" " B-B " " " C-9
" " C-C " " " C-10
" " D-D " " " C-11
" " E-E & F-F " " " C-12
" " T-T " " " C-6

ROUTE NO. 33

SECTION NO. 2

CONTRACT DRAWING NO. C-7

DATE MARCH 14, 1914

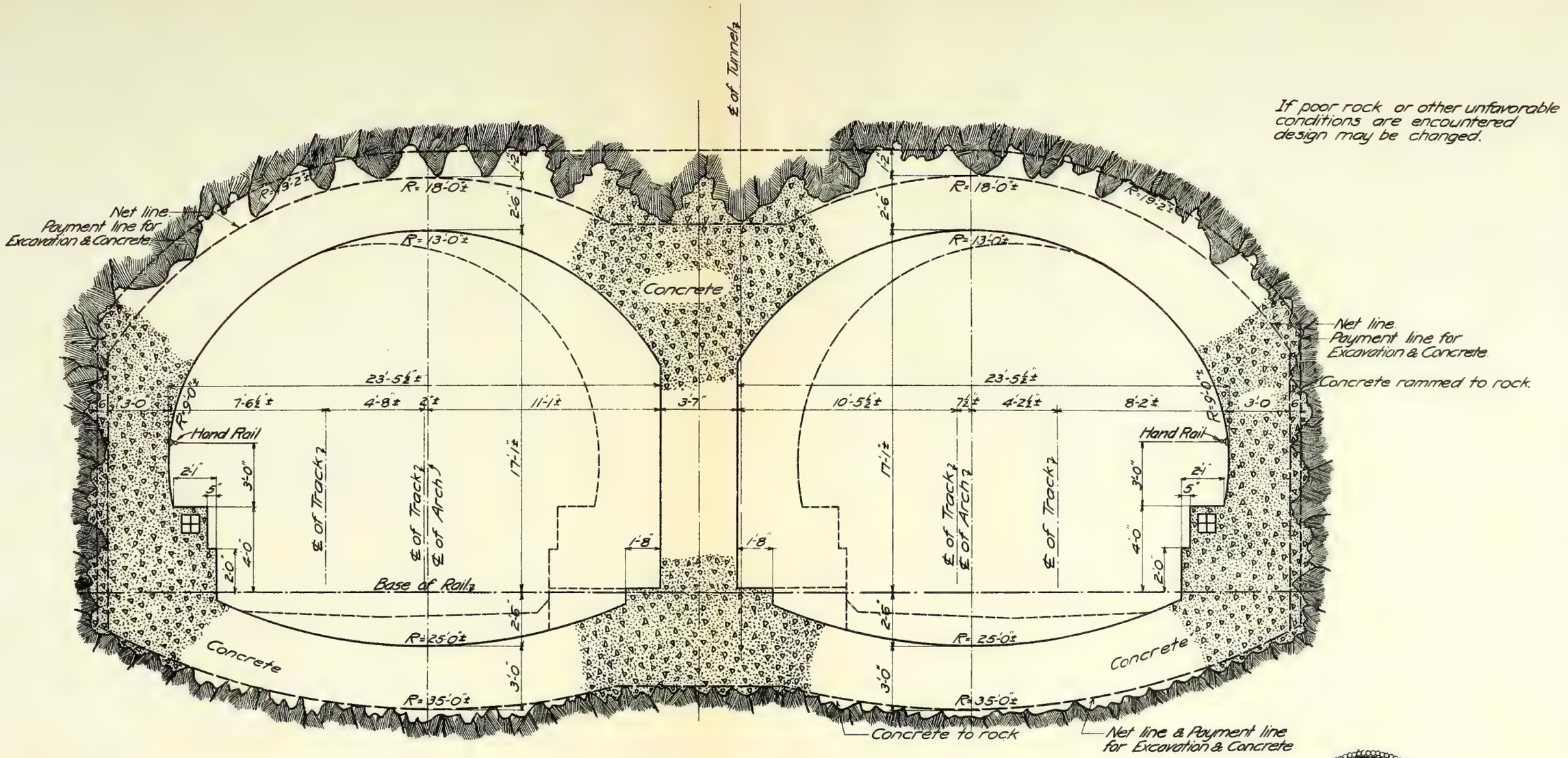
Alfred Craven
CHIEF ENGINEER

SCALE: 0 5 10 FEET

DRAWN BY Cattano
CHECKED BY Nicholson.

64469

M.B. BROWN PRINTING & BINDING CO. N.Y.



SECTION A-A.

ROUTE NO. 33

SECTION NO. 2

CONTRACT DRAWING NO. C-8

DATE MARCH 14, 1914

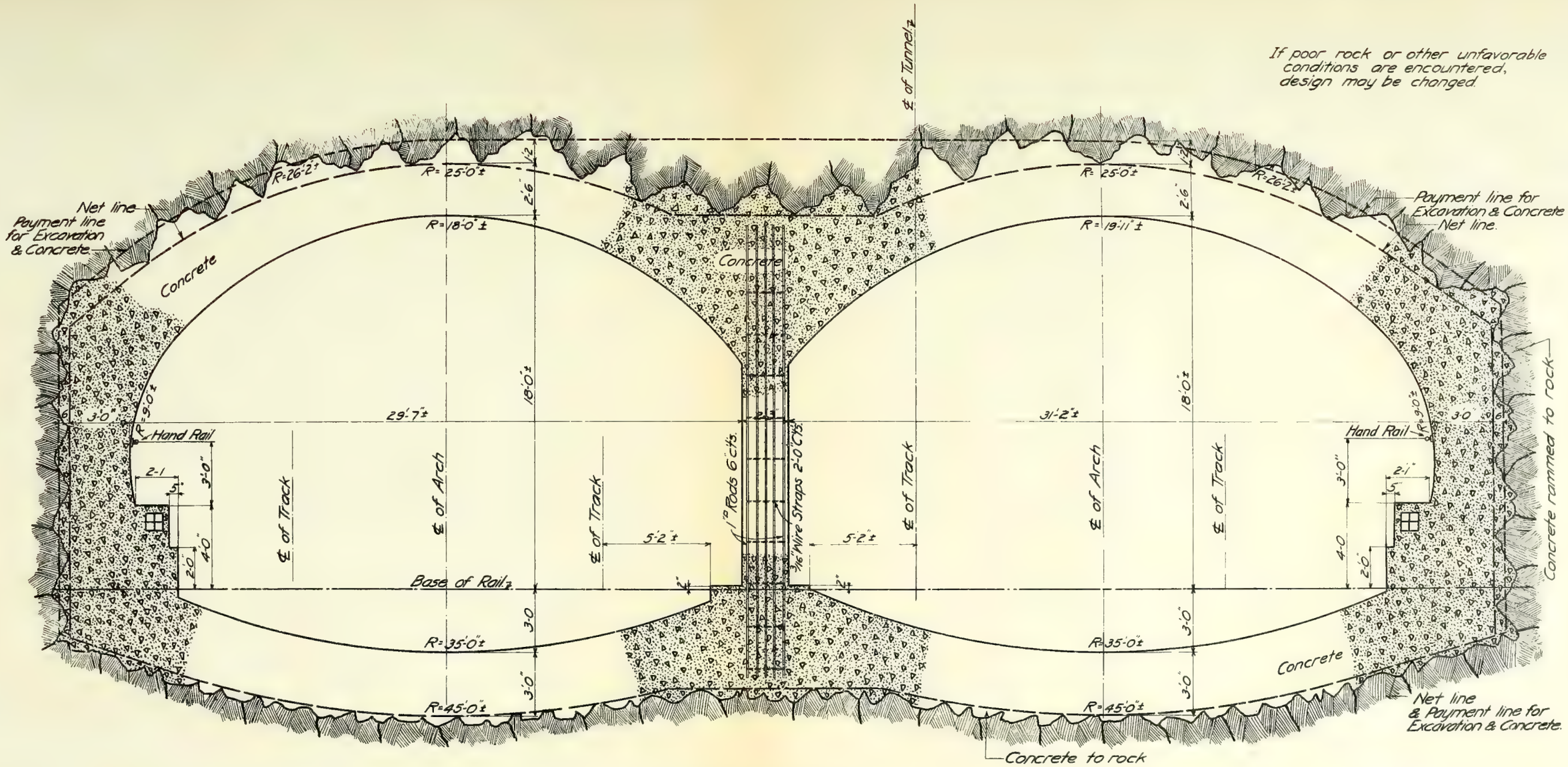
Alfred Craven
CHIEF ENGINEER

SCALE: 0 1 2 3 FEET

DRAWN BY Cattano
CHECKED BY Nicholson

64169

I. B. BROWN PRINTING & BINDING CO. N.Y.



SECTION B-B

NOTE: Arrangement of wire straps in walls similar to that shown on drawing No. C-11.

ROUTE NO. 33

SECTION NO. 2

CONTRACT DRAWING NO. C-9

DATE MARCH 14, 1914

CHIEF ENGINEER

SCALE: 0 1 2 3 FEET

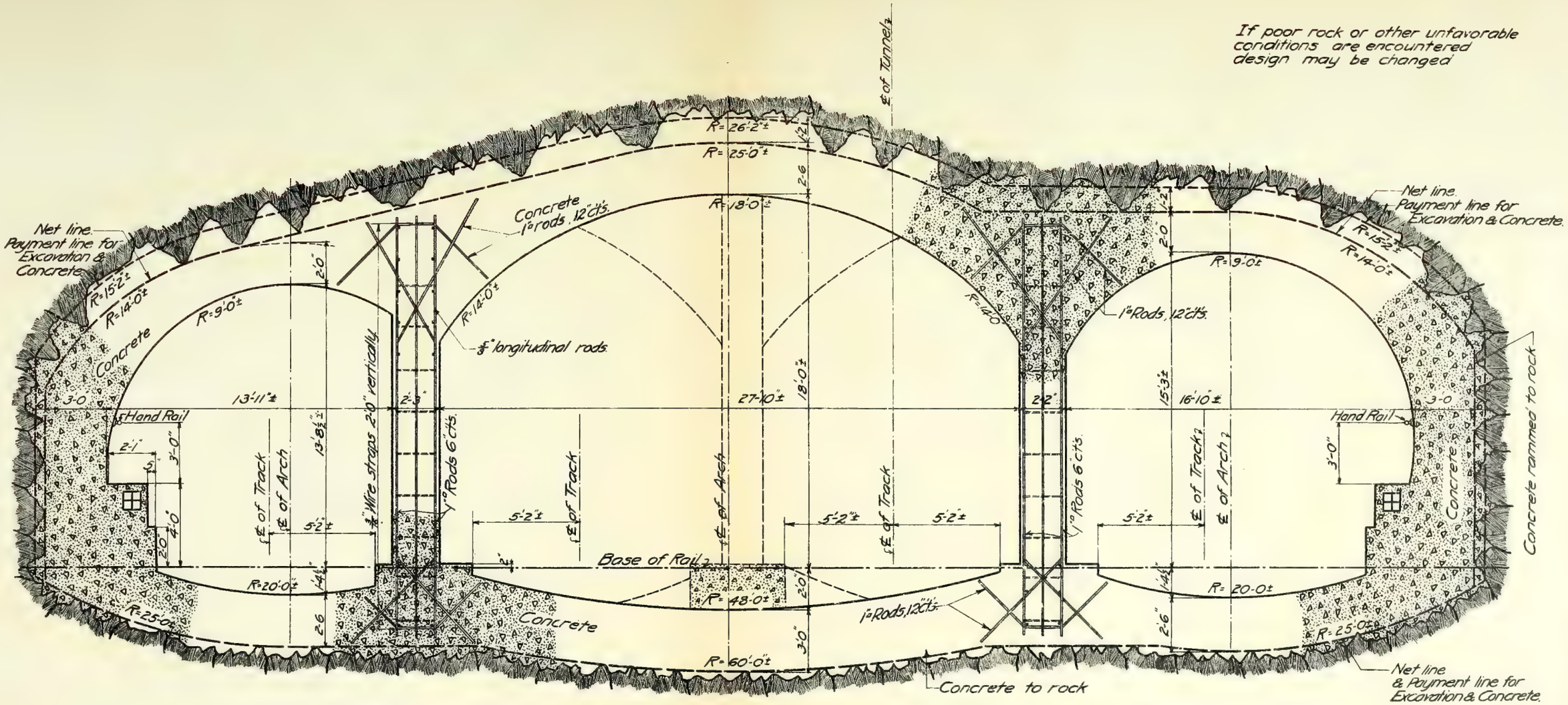
DRAWN BY Cattano.

CHECKED BY Nicholson.

64469

M.B. BROWN PRINTING & BINDING CO. N.Y.

If poor rock or other unfavorable conditions are encountered design may be changed



SECTION C-C

Note:-
Longitudinal rods to be lapped 2'-0" at splices.
Arrangement of wire straps in walls similar to that shown on Dwg. C-11.

ROUTE NO. 33

SECTION NO. 2

CONTRACT DRAWING NO. C-10

DATE MARCH 14, 1914

CHIEF ENGINEER

SCALE: 0 1 2 3 FEET

DRAWN BY Cattana
CHECKED BY Nicholson

64468
M.B. BROWN PRINTING & BINDING CO. N.Y.

If poor rock or other unfavorable conditions are encountered design may be changed

Net line. Payment line for Excavation & Concrete.

Concrete rammed to rock

℄ of Tunnel

R=26'-2"±

R=25'-0"±

R=18'-0"±

R=15'-2"±

R=14'-0"±

R=9'-0"±

Concrete

1" Rods, 12" cts.

5/8" Rods, 15" cts.

3/16" Wire straps spaced 2'-0" vertically.

1" Rods 6" cts.

Hand Rail

℄ of Track

℄ of Arch

Base of Rail

R=25'-0"±

R=48'-0"±

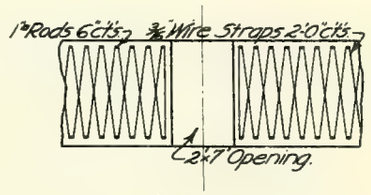
R=60'-0"±

Concrete to rock

Net line & Payment line for Excavation & Concrete

NOTE:
Longitudinal rods to be lapped 2'-0" at splices.

SECTION-DD



SECTION A-A.

ROUTE NO. 33

SECTION NO. 2

CONTRACT DRAWING NO. C-11

DATE MARCH 14, 1914

CHIEF ENGINEER

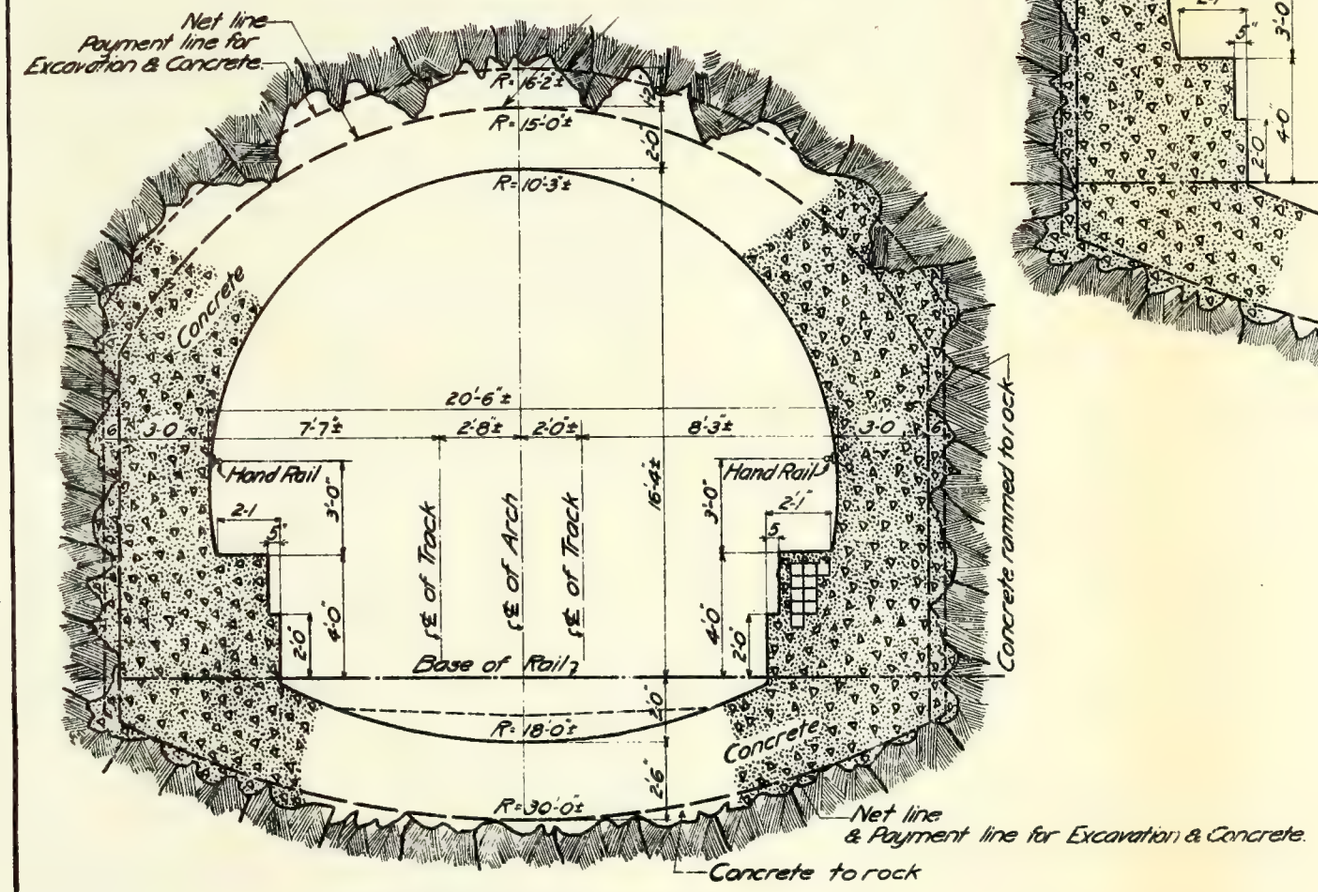
SCALE: 0 1 2 3 FEET

DRAWN BY Cattano.

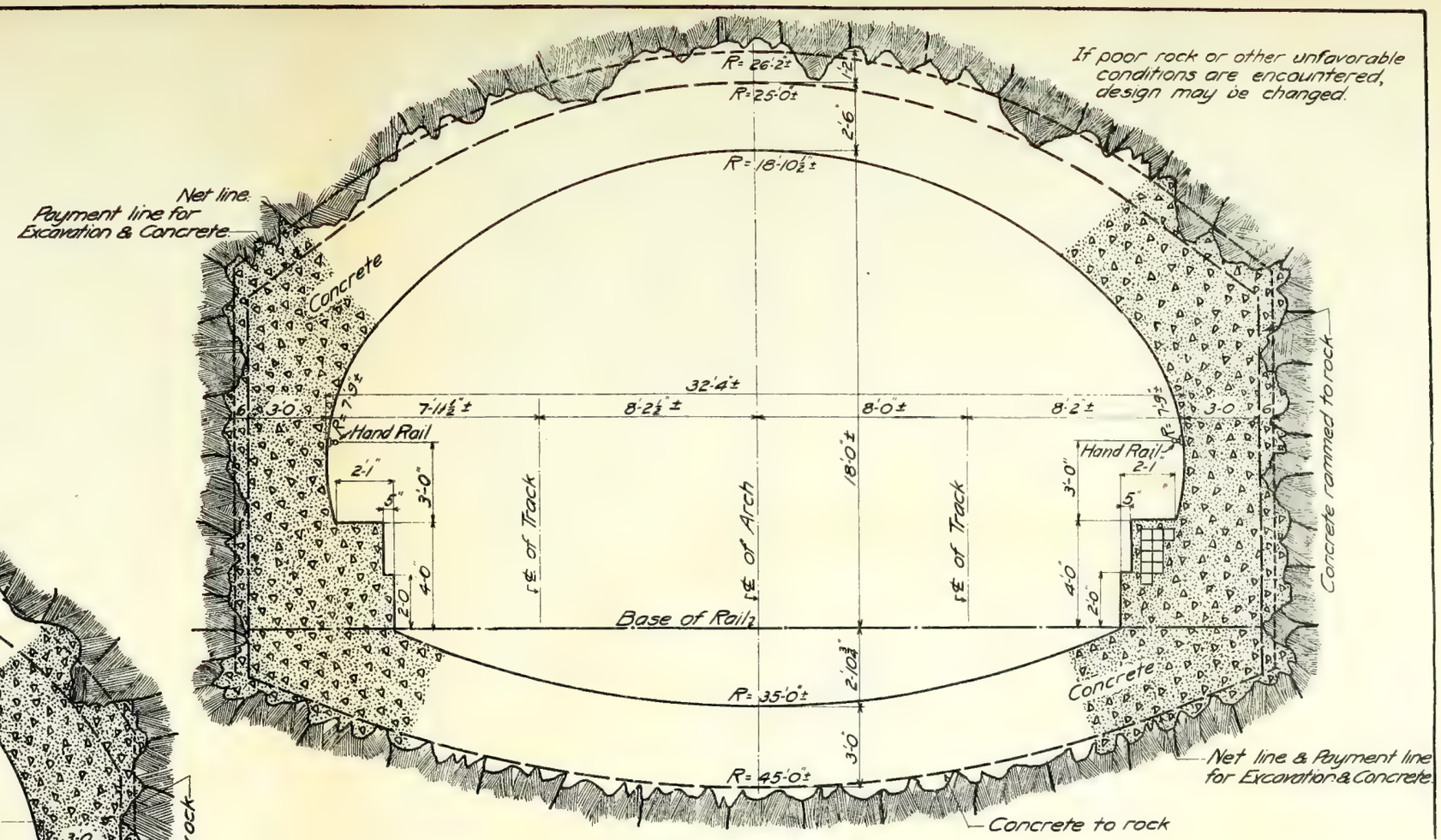
CHECKED BY Nicholson.

64169

M.B. BROWN PRINTING & BINDING CO. N.Y.



SECTION E-E



SECTION F-F

ROUTE NO. 33

SECTION NO. 2

CONTRACT DRAWING NO. C-12

DATE MARCH 14, 1914

CHIEF ENGINEER

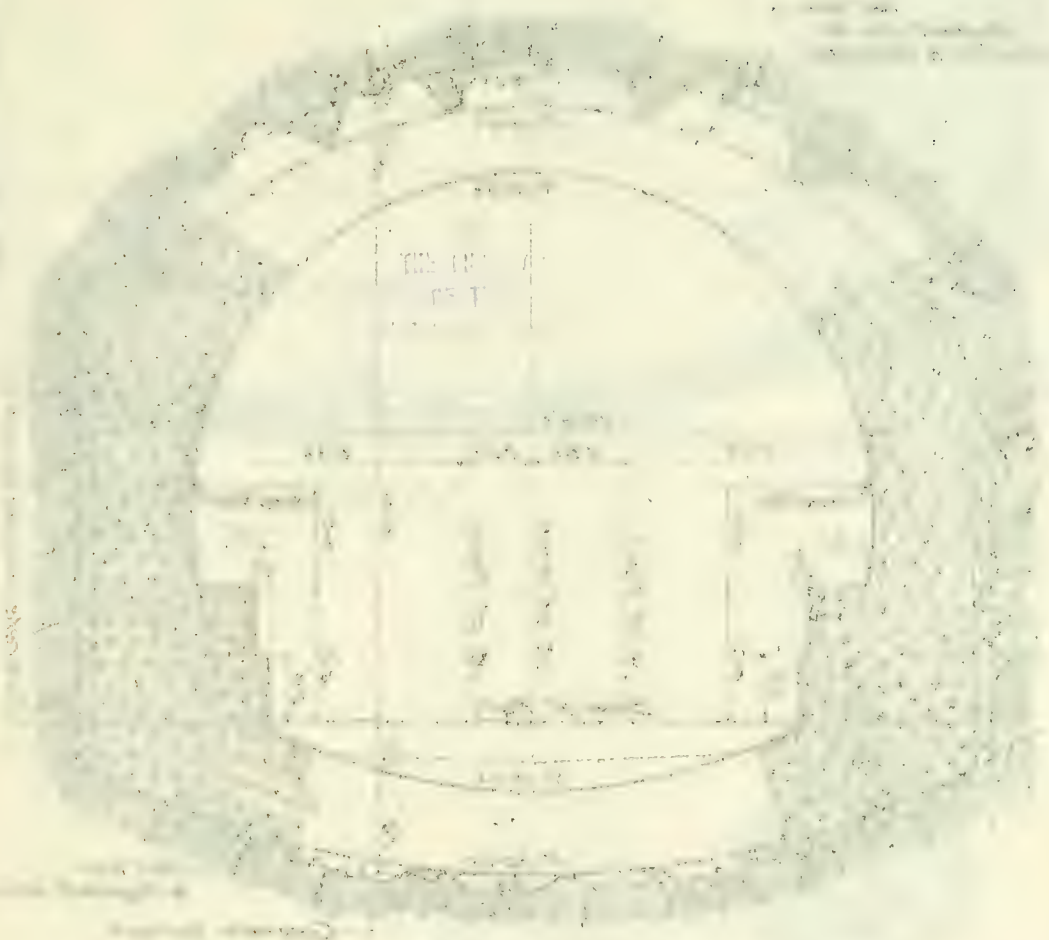
SCALE: 0 1 2 3 FEET

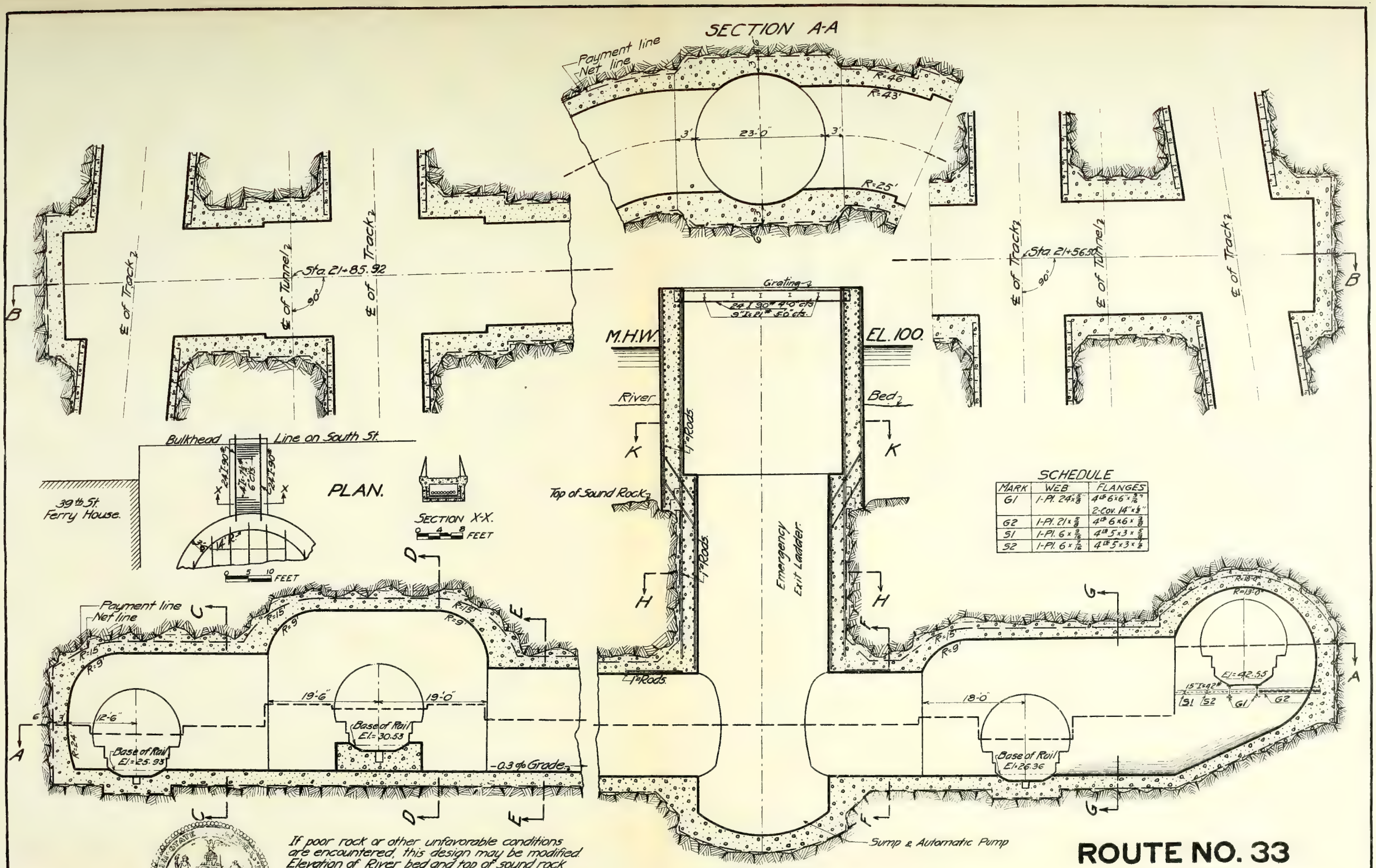
DRAWN BY Cattano

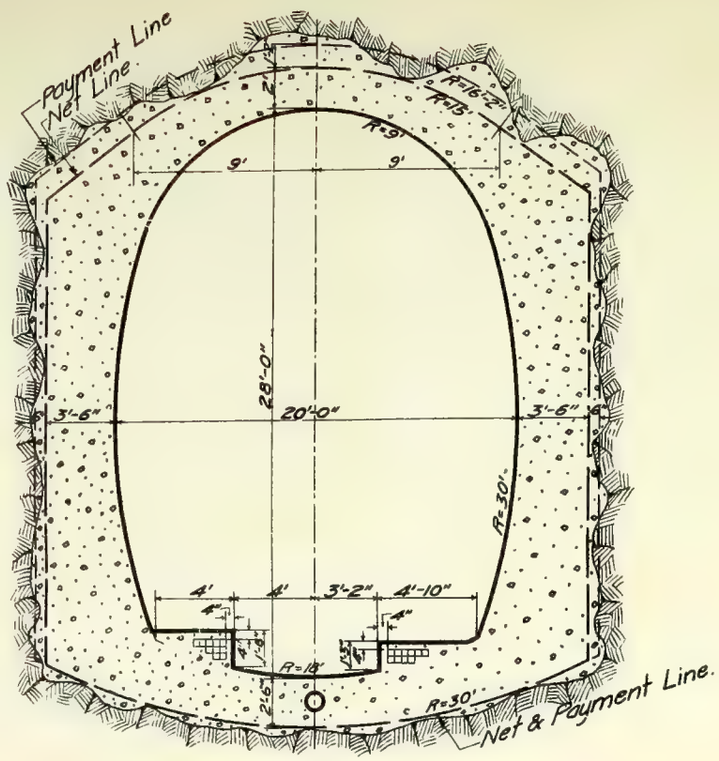
CHECKED BY Nicholson

64463

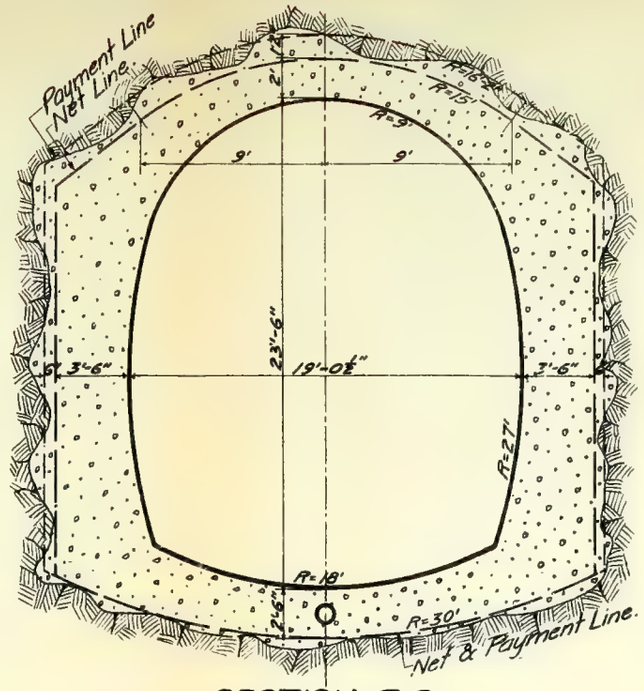
M.B. BROWN PRINTING & BINDING CO. N.Y.



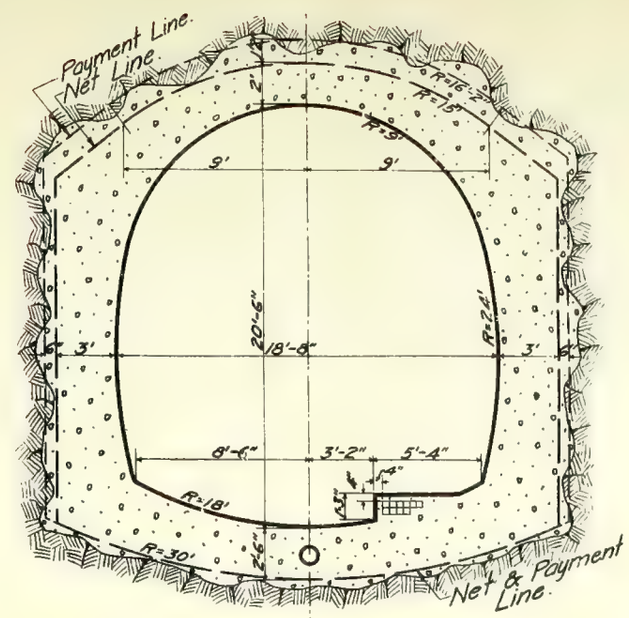

SECTION A-A
Payment line
Net line
R=46'
R=43'
23'-0"
3'
R=25'
℄ of Track
℄ of Tunnel
Sta. 21+85.92
90°
Sta. 21+56.50
B
Grating
M.H.W.
EL. 100.
River
Bed
K
Top of Sound Rock
Emergency Exit Ladder
H
Bulkhead Line on South St.
39th St. Ferry House.
PLAN.
SECTION X-X.
FEET
D
C
E
G
A
F
R=15'
R=9'
R=18'-0"
R=13'-0"
19'-6"
19'-0"
12'-6"
18'-0"
Base of Rail El.=25.93
Base of Rail El.=30.53
Base of Rail El.=26.36
El.=42.55
-0.3% Grade
Sump & Automatic Pump
SCHEDULE
MARK | WEB | FLANGES
G1 | 1-Pl. 24×3/8" | 4 Ls 6×6×3/16" 2-Cov. 14"×1/2"
G2 | 1-Pl. 21×3/8" | 4 Ls 6×6×3/8"
S1 | 1-Pl. 6×3/16" | 4 Ls 5×3×5/16"
S2 | 1-Pl. 6×1/16" | 4 Ls 5×3×1/4"
If poor rock or other unfavorable conditions are encountered, this design may be modified. Elevation of River bed and top of sound rock approximate only.
SECTION B-B
ROUTE NO. 33
SECTION NO. 2
CONTRACT DRAWING NO. C-13
DATE MARCH 14, 1914
CHIEF ENGINEER
SCALES
FEET
DRAWN BY Goldschlag
CHECKED BY Holland
PUBLIC SERVICE COMMISSION FIRST DISTRICT
M.B. BROWN PRINTING & BINDING CO. N.Y.



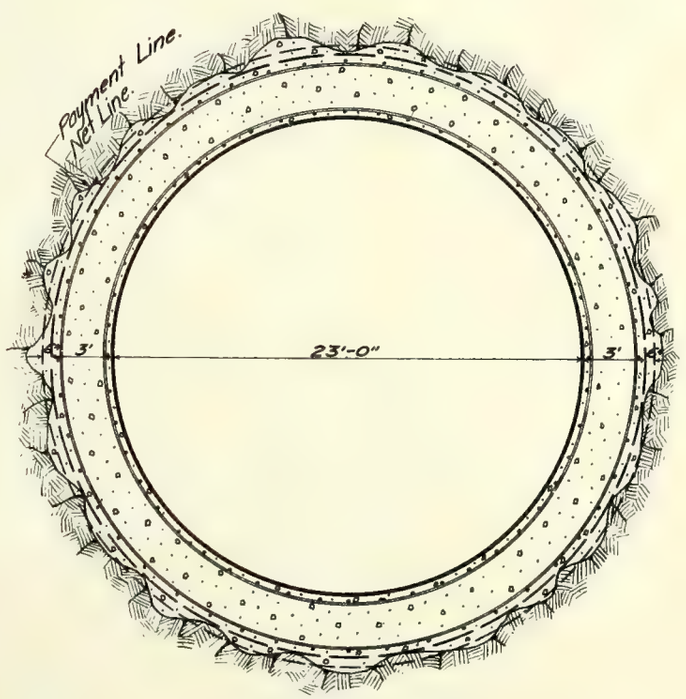
SECTION D-D



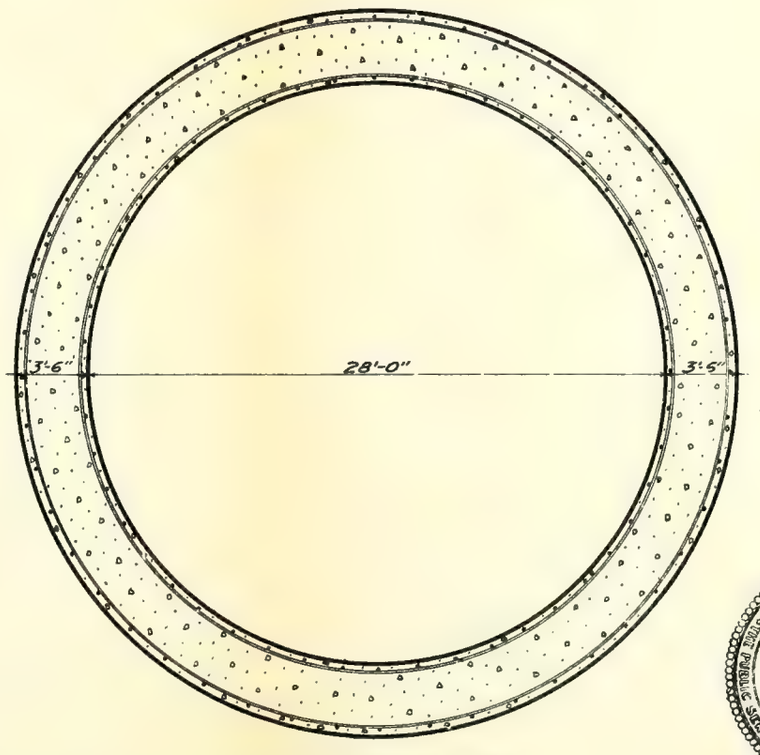
SECTION G-G.



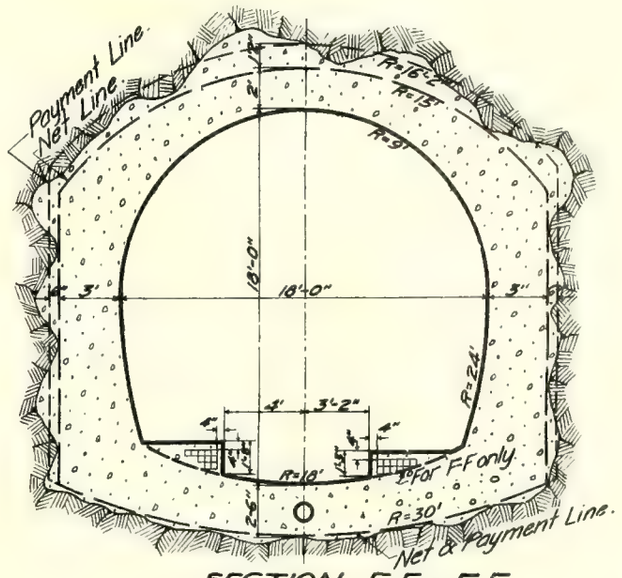
SECTION C-C



SECTION H-H



SECTION K-K



SECTION E-E & F-F.

DRAWN BY Serra
CHECKED BY Holland

ROUTE NO. 33

SECTION NO. 2

CONTRACT DRAWING NO. C-14

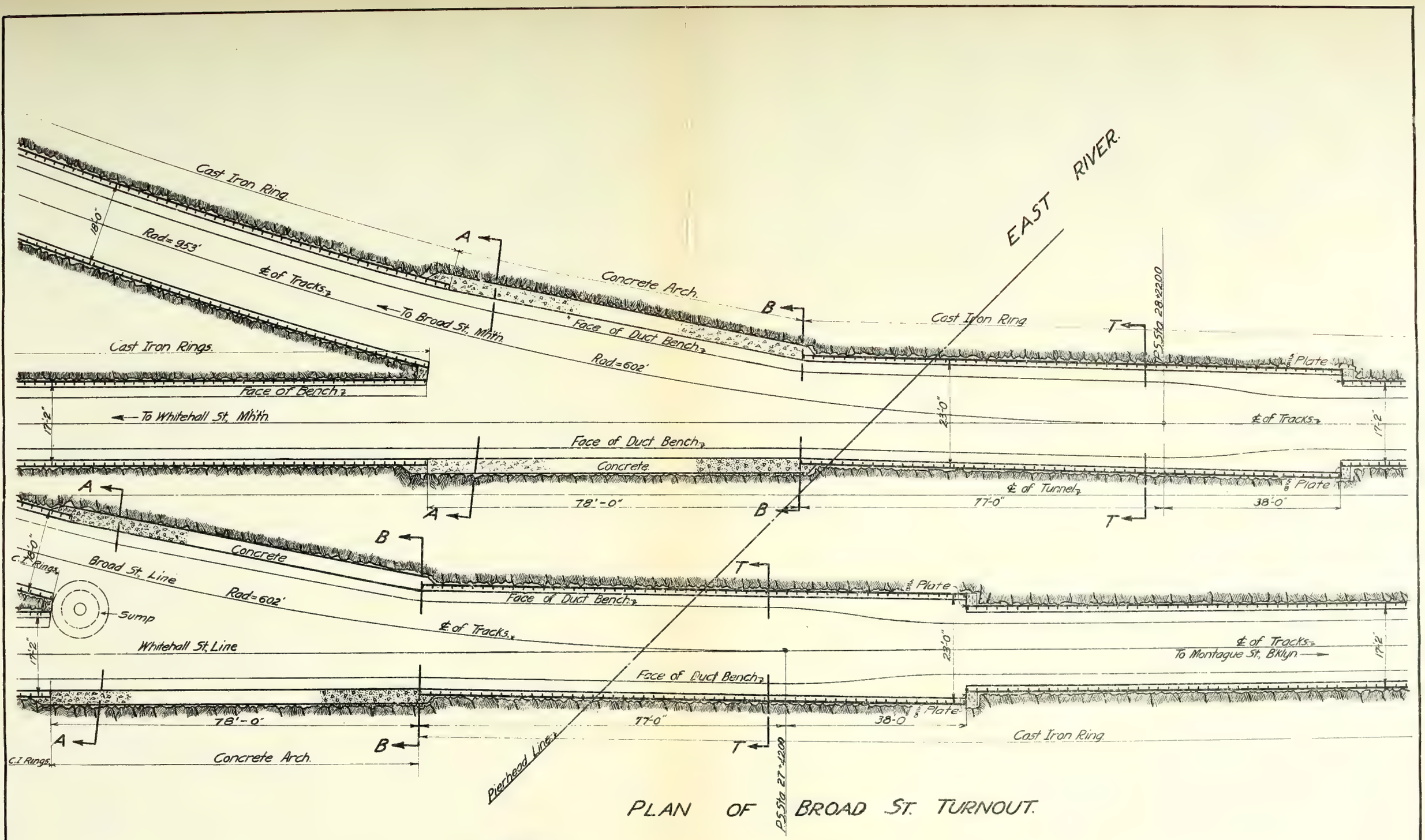
DATE MARCH 14, 1914

CHIEF ENGINEER

SCALE 0 2 4 FEET

64-169

M.B. BROWN PRINTING & BINDING CO. N.Y.



PLAN OF BROAD ST. TURNOUT.

REFERENCE NOTES.
For Sections A-A & B-B, see Drawing No. C-16
" Section T-T " " " C-6

ROUTE NO. 33

SECTION NO. 2

CONTRACT DRAWING NO. C-15

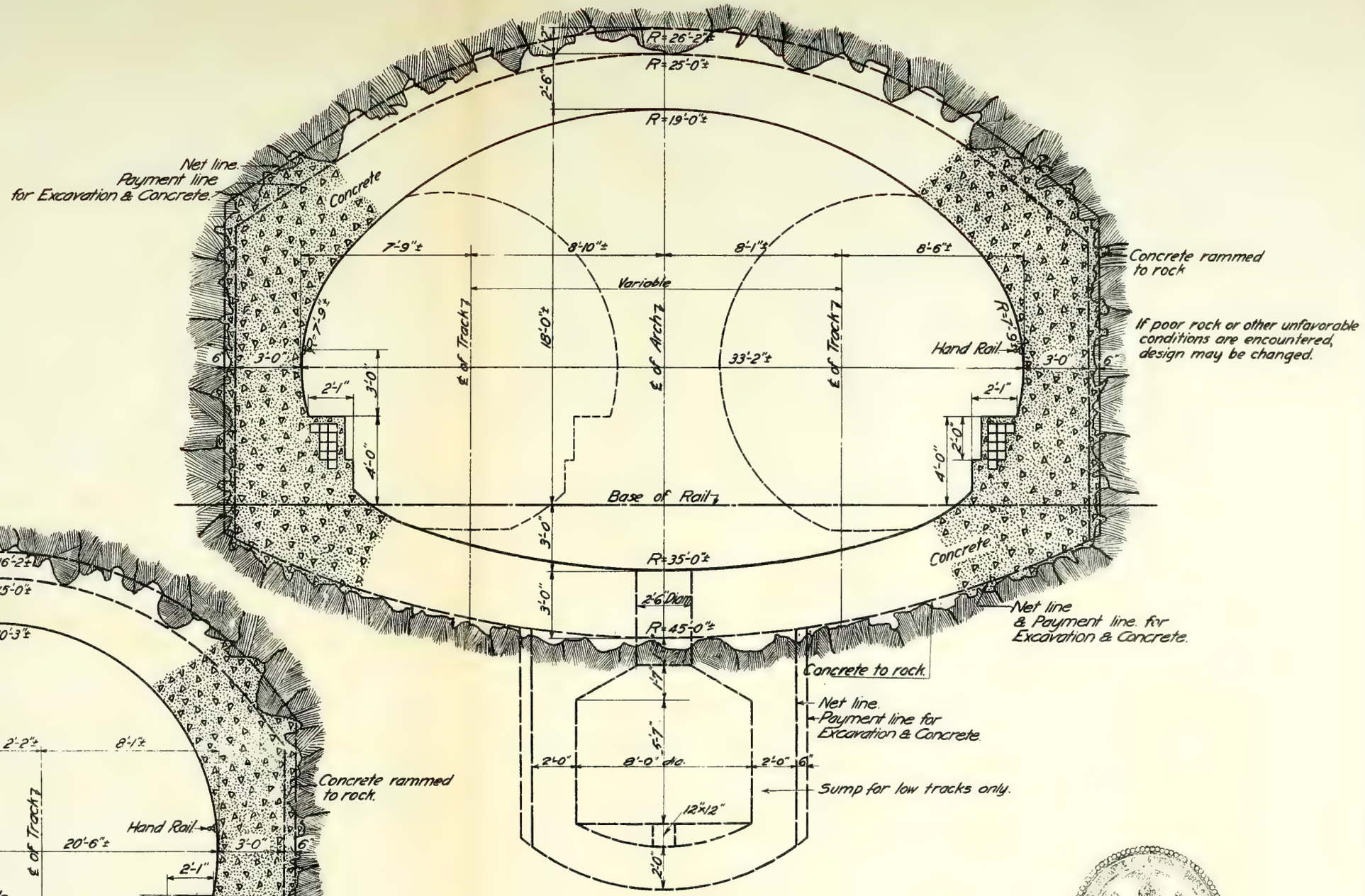
DATE MARCH 14, 1914

CHIEF ENGINEER

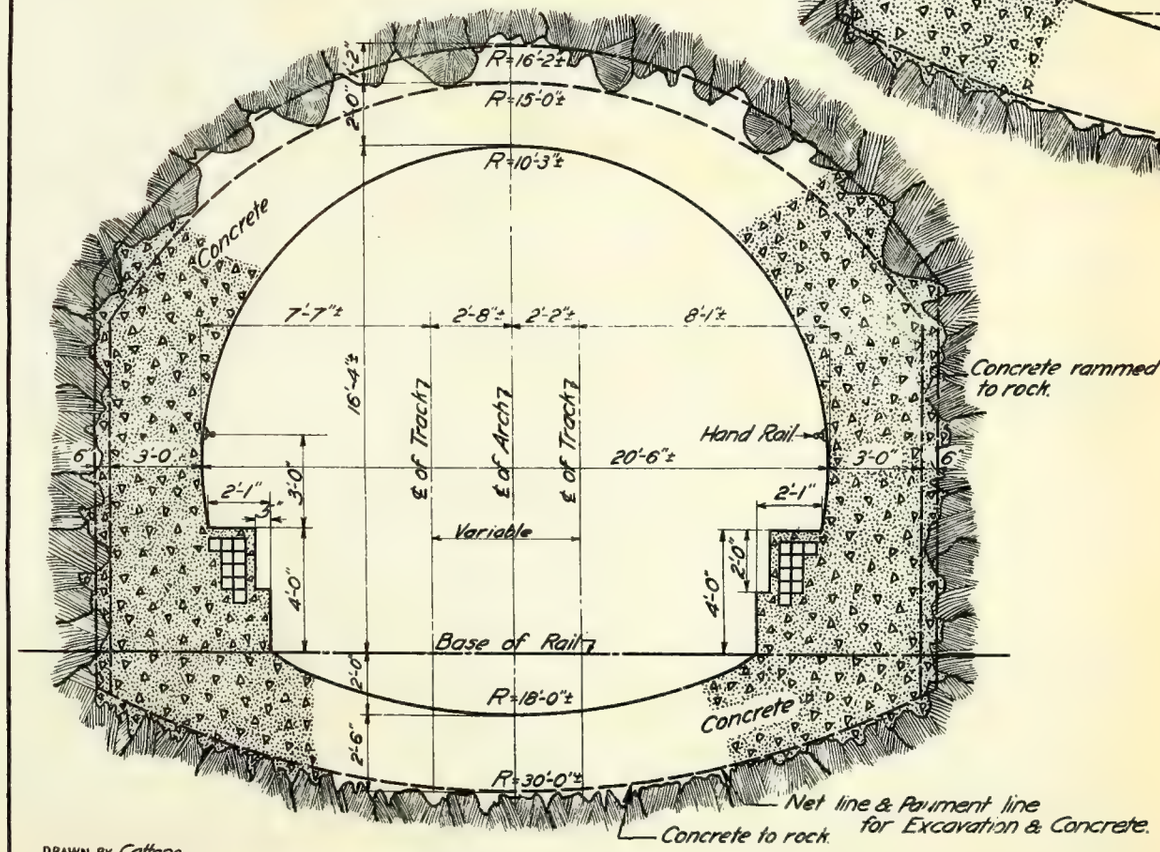
SCALE: 0 5 10 FEET

DRAWN BY Cattano.
CHECKED BY Nicholson

M.B. BROWN PRINTING & BINDING CO. N.Y.



SECTION A-A



SECTION B-B

DRAWN BY Cattano.
CHECKED BY Nicholson.

ROUTE NO. 33

SECTION NO. 2

CONTRACT DRAWING NO. C-16

DATE MARCH 14, 1914

CHIEF ENGINEER

SCALE: 0 1 2 3 FEET

64469

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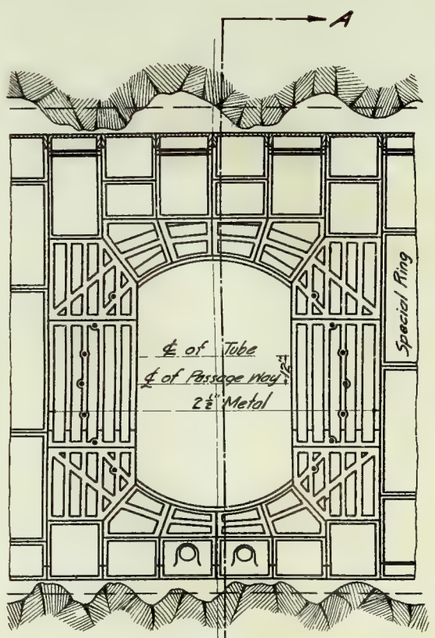
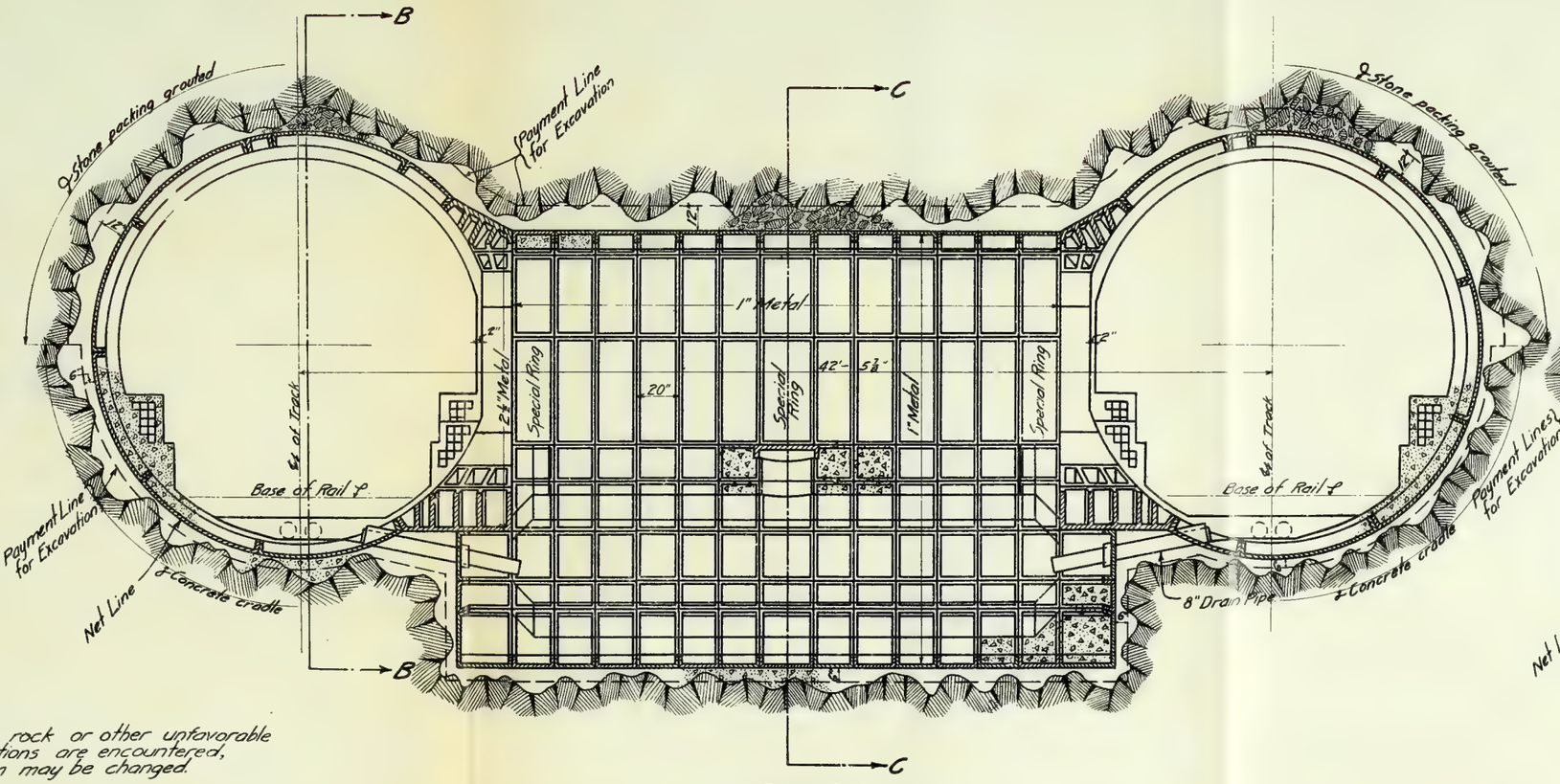


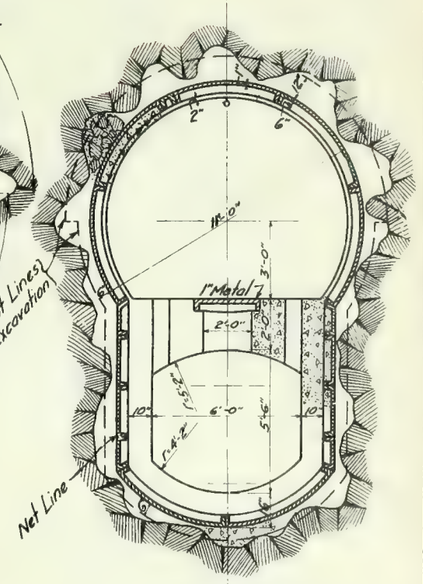
SECTION B-B



If poor rock or other unfavorable conditions are encountered, design may be changed.

SECTION A-A

SUMP AND PUMP CHAMBER.



SECTION C-C

DRAWN BY N. Goldschlag
CHECKED BY C.M. Ingland

ROUTE NO. 33

SECTION NO. 2

CONTRACT DRAWING NO. C-17

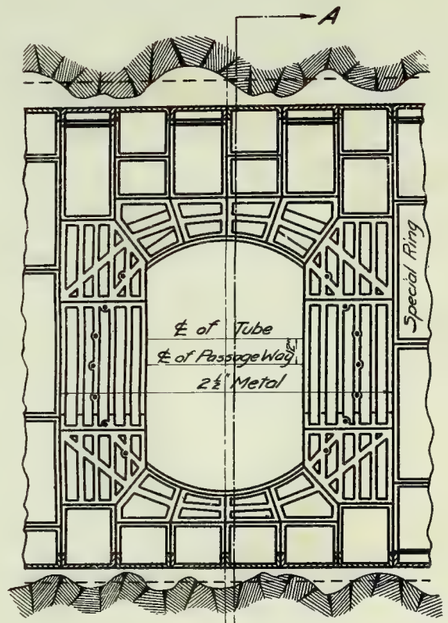
DATE MARCH 14, 1914

CHIEF ENGINEER

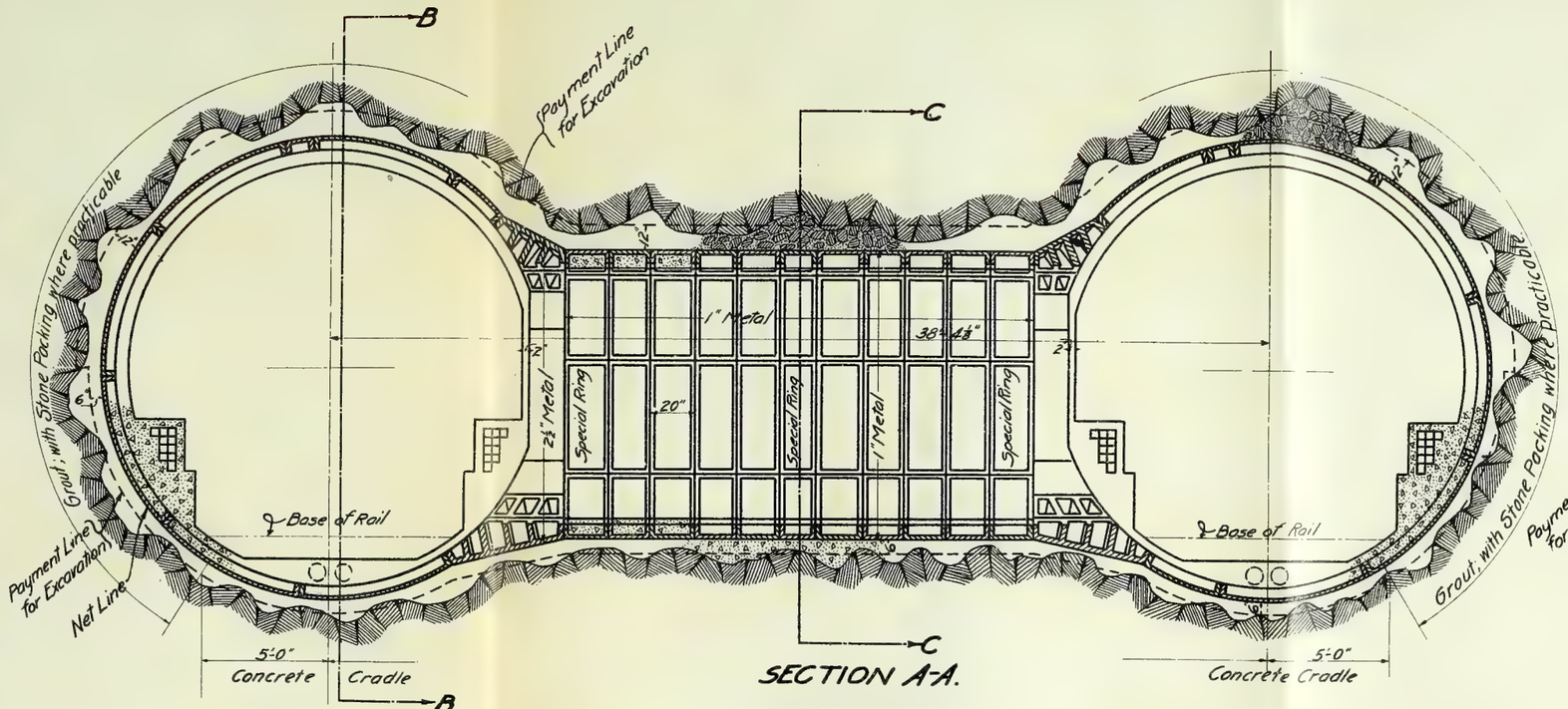
SCALE 1 2 3 FEET

G4469

M.B. BROWN PRINTING & BINDING CO. N.Y.

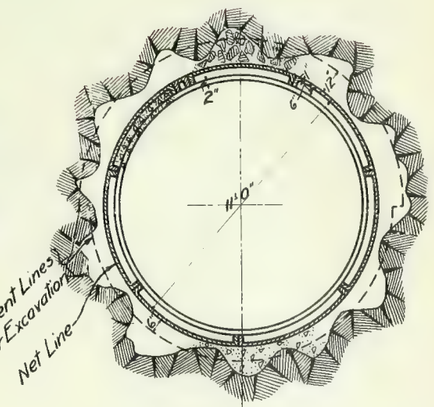


SECTION B-B.



SECTION A-A.

FEEDER CHAMBER.



SECTION C-C.

If poor rock or other unfavorable conditions are encountered, design may be changed.

DRAWN BY N. Goldschlag
CHECKED BY C.M. Holland

ROUTE NO. 33

SECTION NO. 2

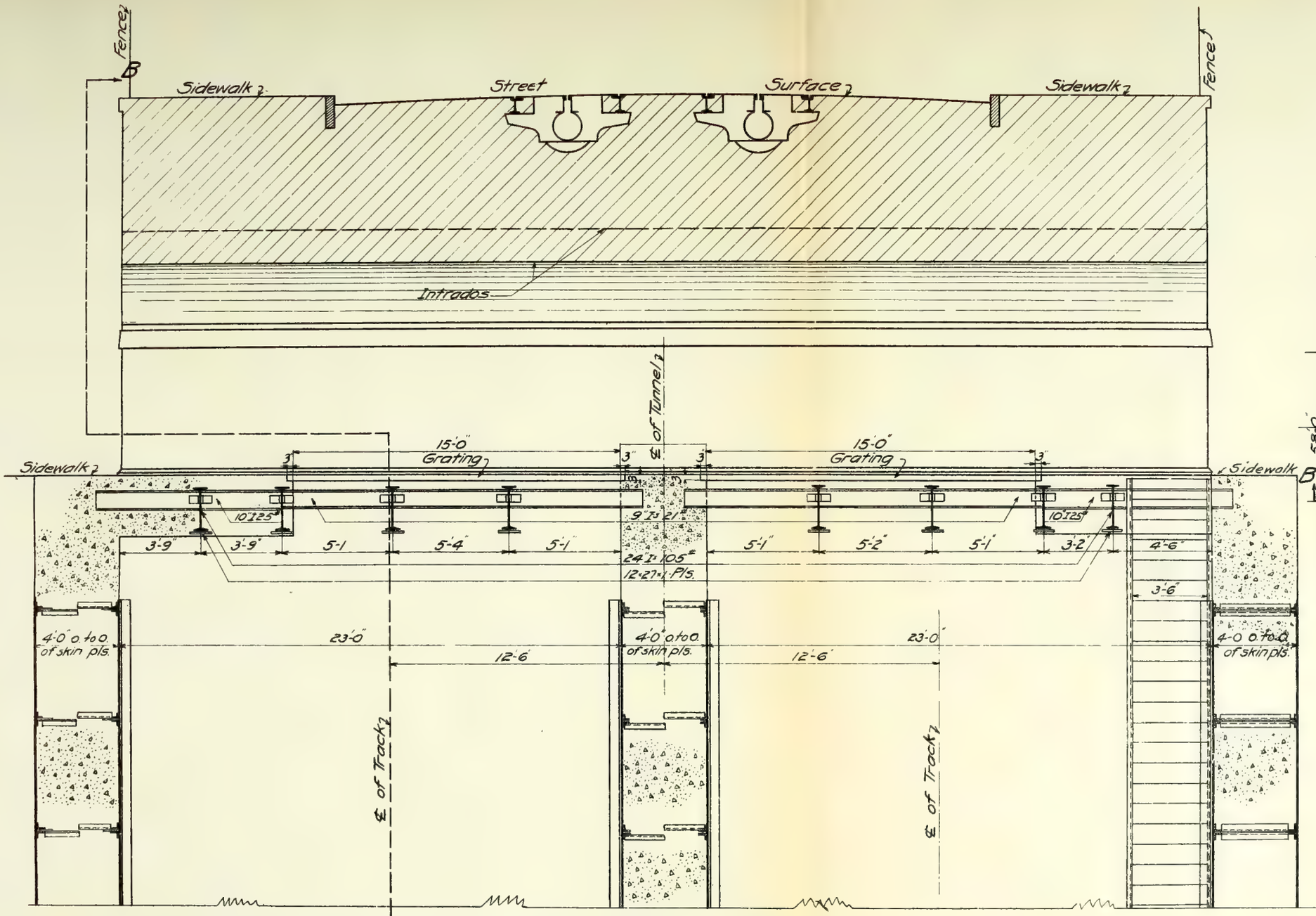
CONTRACT DRAWING NO. C-18

DATE MARCH 14, 1914.

CHIEF ENGINEER

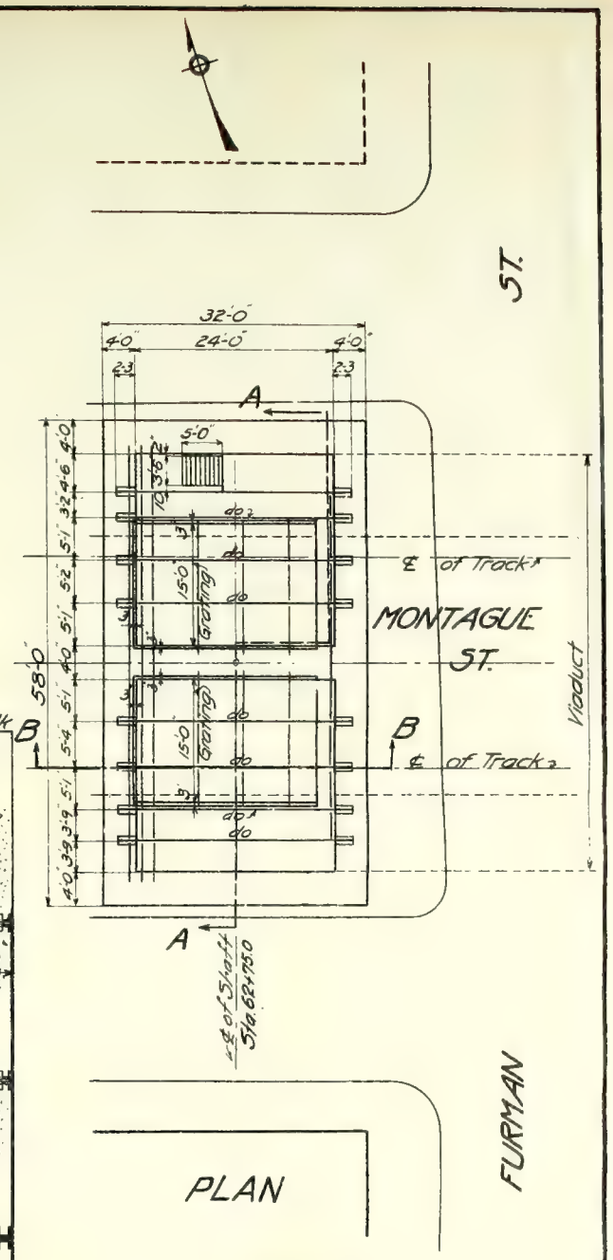
SCALE 1 2 3 FEET

M.S. BROWN PRINTING & BINDING CO. N.Y.



For part of section below this line see dwg No. C-20

PART SECTION A-A



REFERENCE NOTES.

For Part Section A-A	see drawing	No. C-20
" " " B-B	" "	" C-21
" Detail of main steel work	" drawings	" C-22 to C-31
" " " Skin Plates		" C-32 to C-37

ROUTE NO. 33

SECTION NO. 2

CONTRACT DRAWING NO. C-19

DATE MARCH 14, 1914

Alfred Gibson
CHIEF ENGINEER

SCALES: 0 5 10 FEET; 0 1 2 3 FEET

DRAWN BY Titunik
CHECKED BY Cattano

64469

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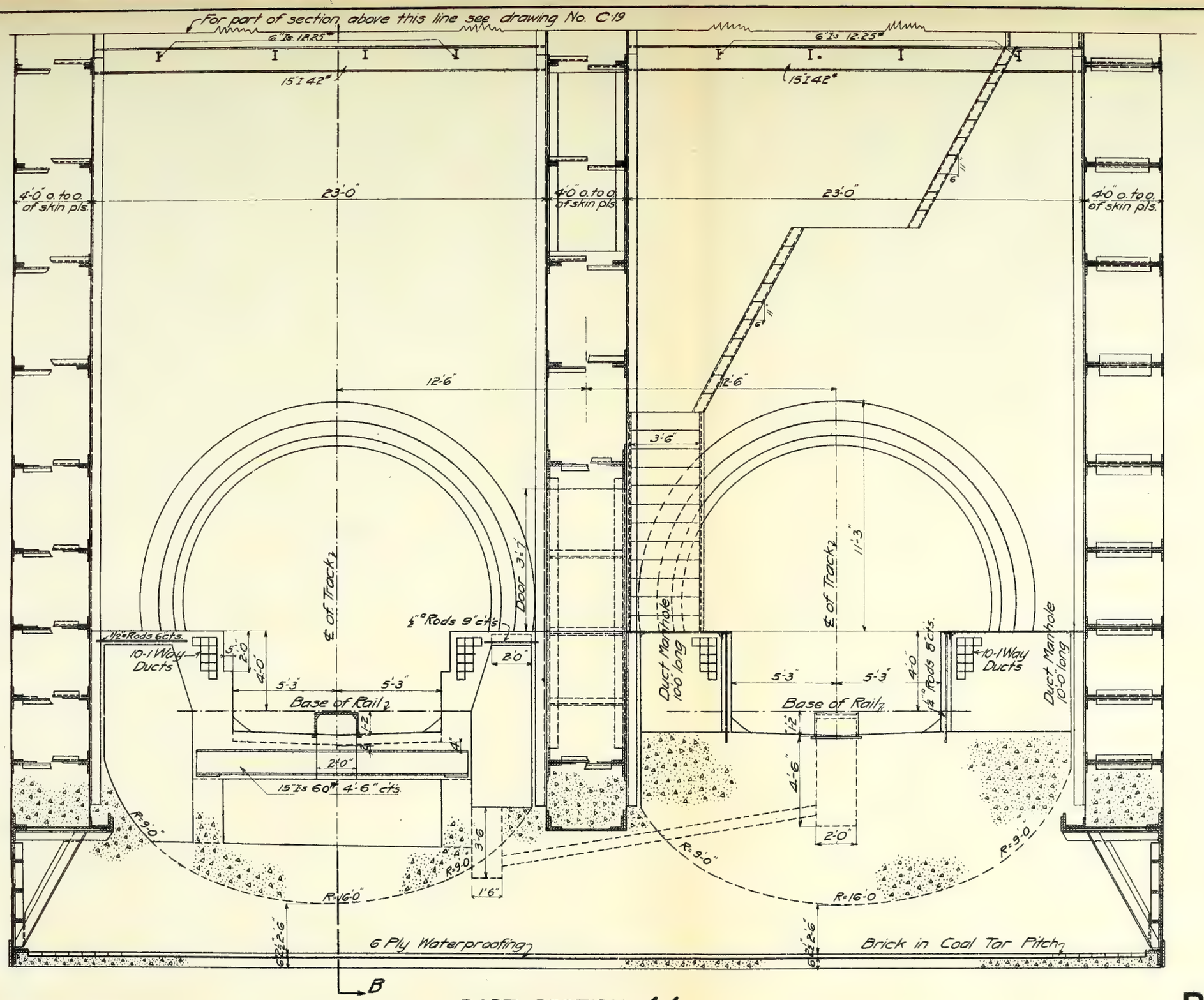

PART SECTION A-A

REFERENCE NOTES.

For Plan and Part Section A-A see drawing No. C-19
" " B-B " " " C-21
" Detail of main steel work " drawings " C-22 to C-31
" " " Skin Plates " " C-32 to C-37

DRAWN BY Titunik
CHECKED BY Cattano

ROUTE NO. 33

SECTION NO. 2

CONTRACT DRAWING NO. C-20

DATE MARCH 14, 1914

CHIEF ENGINEER

SCALE 0 1 2 3 FEET

64469

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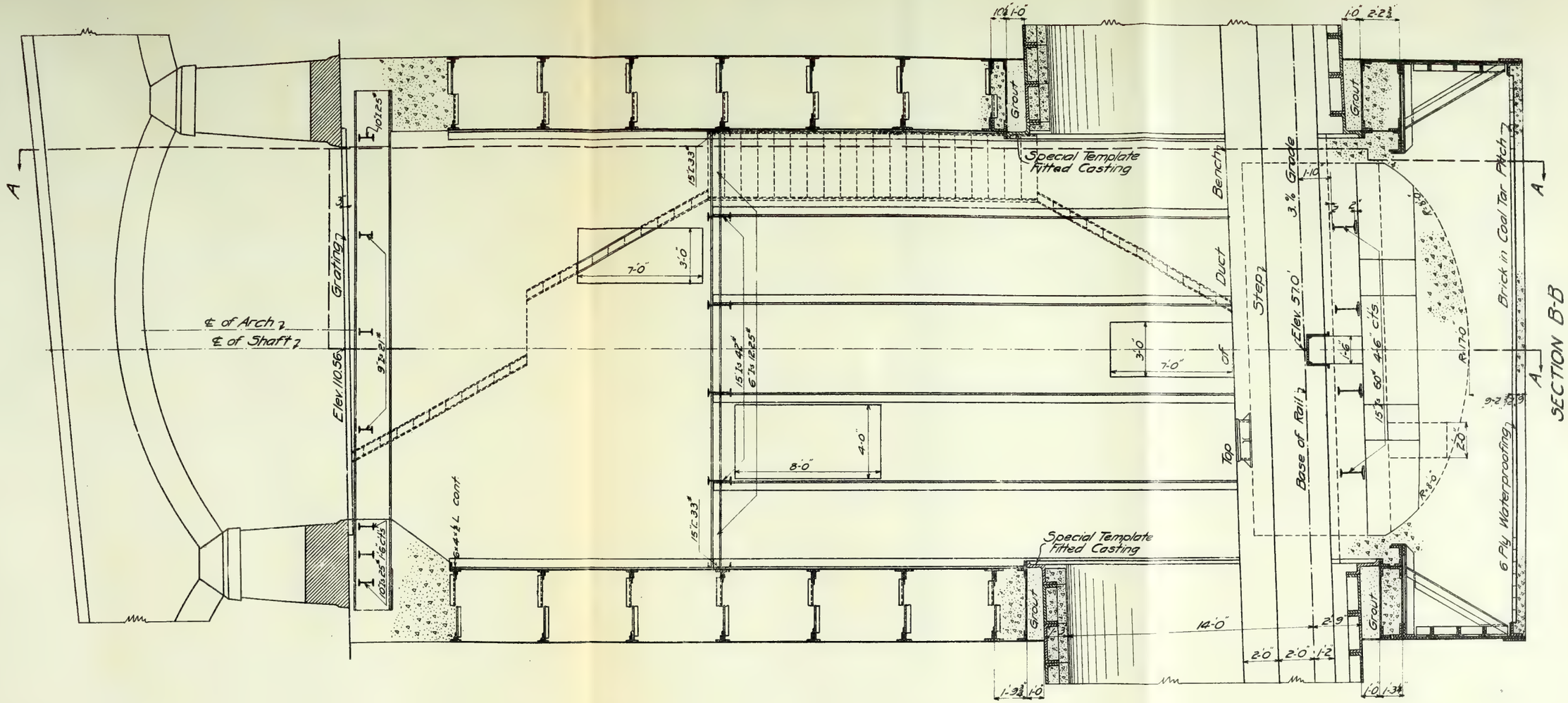

REFERENCE NOTES.

For Plan and Part Section A-A see drawing No. C-19
" " " A-A " " " C-20
" Detail of main steel work " drawings " C-22 to C-31
" " " Skin Plates " " C-32 to C-37

DRAWN BY
CHECKED BY

ROUTE NO. 33

SECTION NO. 2

CONTRACT DRAWING NO. C-21

DATE MARCH 14, 1914

CHIEF ENGINEER

SCALE 0 1 2 3 FEET

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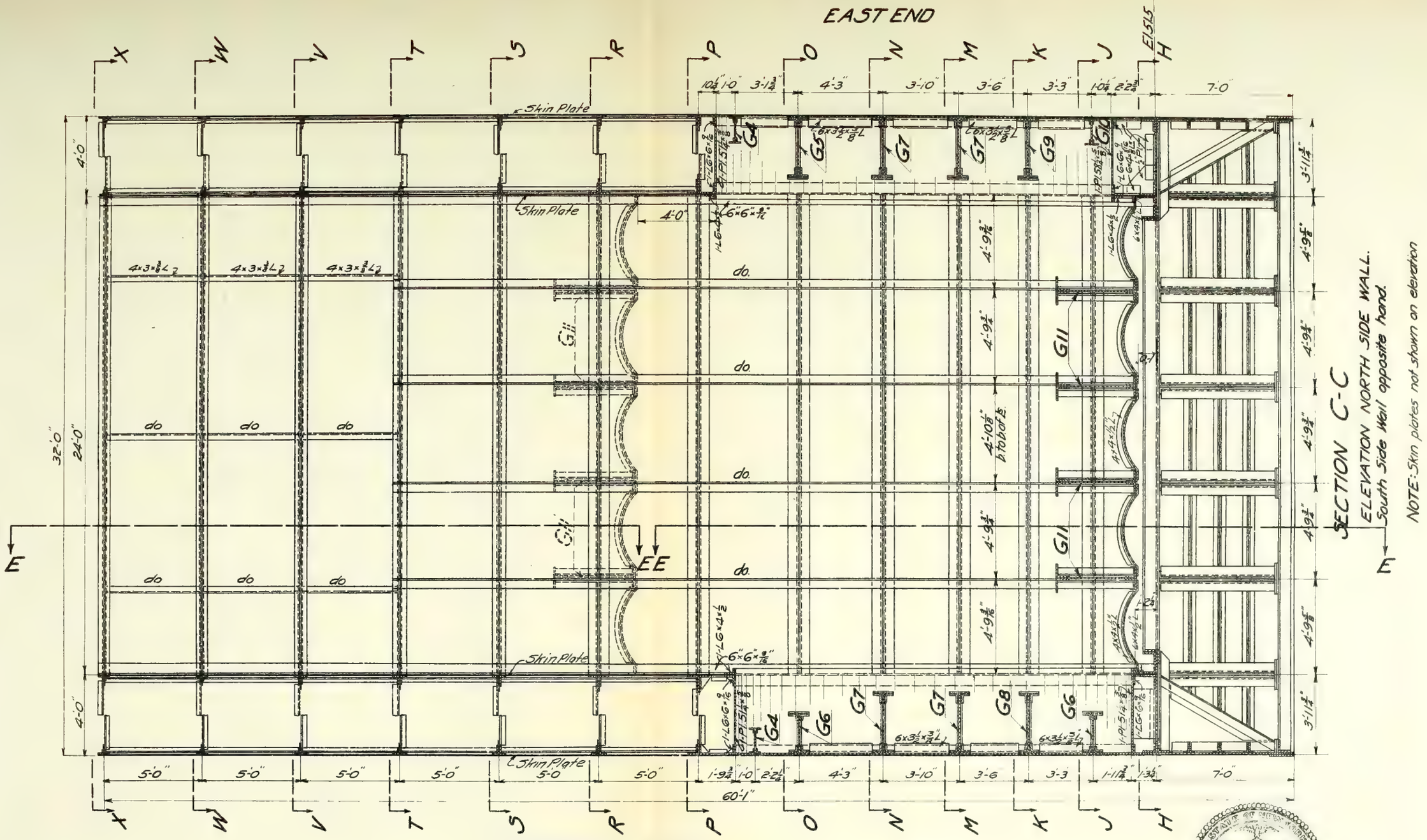


REFERENCE NOTES.

For Plan and finished structure see drawings No. C-19 to C-21
" Part Section E-E " drawing " C-24
" " " E-E " " " C-25
" " " H-H " " " C-26
" " J-J " " " C-27
" Sections M-M & N-N " " " C-28
" " K-K & O-O " " " C-29
" " P-P, R-R, S-S, T-T, V-V, W-W & X-X see dwg " C-30
" Schedule showing sizes of members " " " C-31
" Detail of Skin Plates see drawings " C-32 to C-37

ROUTE NO. 33

SECTION NO. 2

CONTRACT DRAWING NO. C-22

DATE MARCH 14, 1914

CHIEF ENGINEER

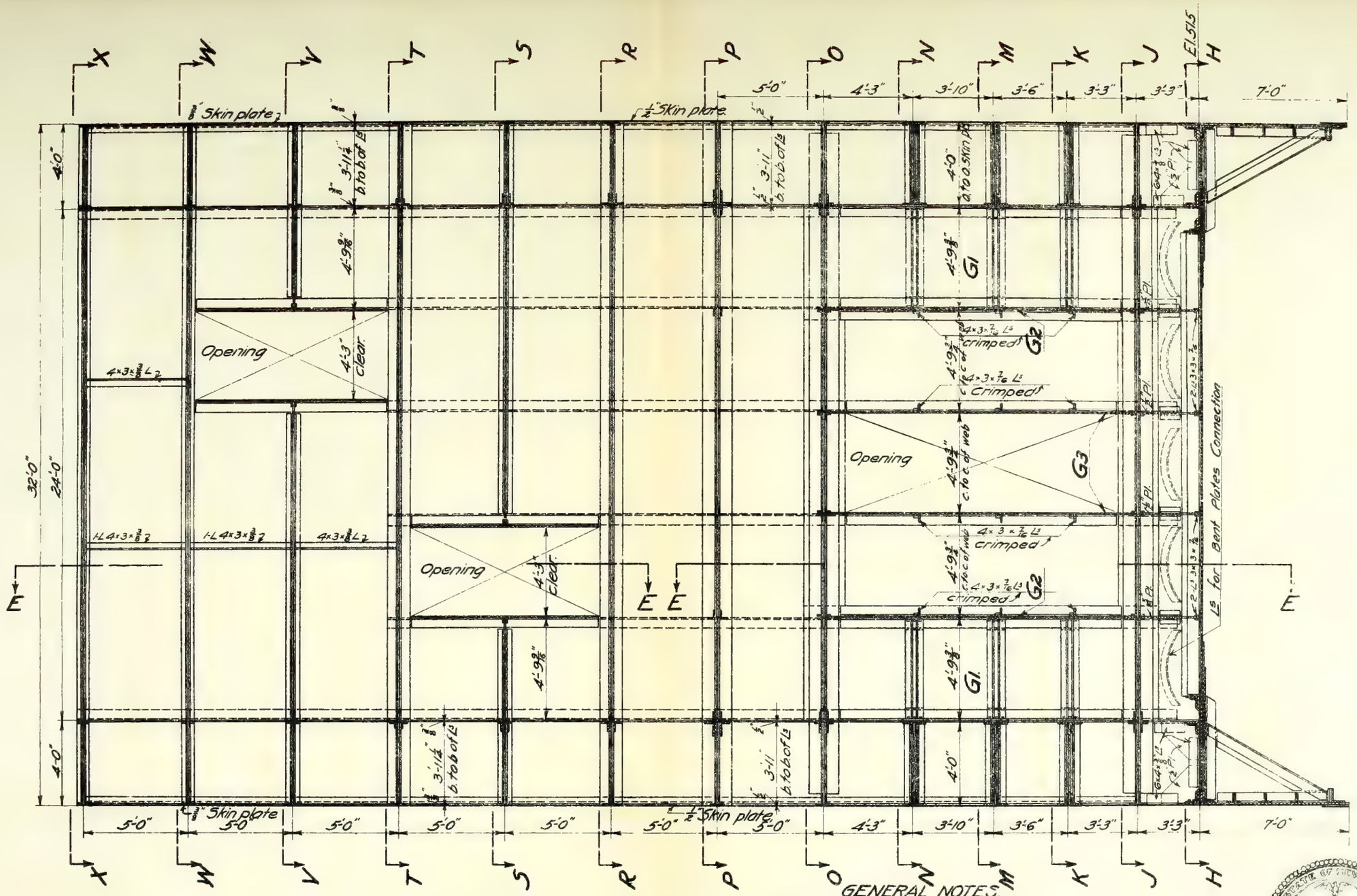
SCALE 0 1 2 3 FEET

DRAWN BY Nicholson

CHECKED BY Finkelstein

6446B

M.S. BROWN PRINTING & BINDING CO. N.Y.



REFERENCE NOTES.

For Plan and finished structure see drawings				No. C-19 to C-21
" Part Section	E-E	"	drawing	" C-24
" " "	E-E	"	"	" C-25
" "	H-H	"	"	" C-26
" "	J-J	"	"	" C-27
" Sections M-M & N-N		"	"	" C-28
" " K-K & O-O		"	"	" C-29
" " P-P, R-R, S-S, T-T, V-V, W-W & X-X see dwg				" C-30
" Schedule showing sizes of members		"	"	" C-31
" Detail of Skin Plates see drawings				" C-32 to C-37

GENERAL NOTES.

The exterior skin-plates shall be caulked from bottom to top. The interior skin-plates including both sides of the skin-plates of the central cross wall shall be caulked below the upper position of the air tight chamber roof. The caulking shall be watertight where it will be exposed to water pressure only, and airtight where it will be exposed to air pressure during the sinking of the shaft and construction of tunnels.

All openings that cannot be made watertight by caulking, are to be plugged with metal plugs and made watertight.

The Bulkheads closing the shield openings and the cross wall openings, and the roofs of the working chambers, will not form part of the completed work, and will be considered plant.

Grout holes in steel to be provided as required.

Rivet Spacing in caulked work shall not exceed 4 inches.

ROUTE NO. 33

SECTION NO. 2

CONTRACT DRAWING NO. C-23

DATE MARCH 14, 1914

CHIEF ENGINEER

SCALE 0 1 2 3 FEET

DRAWN BY Booth

CHECKED BY Finklestein

64469

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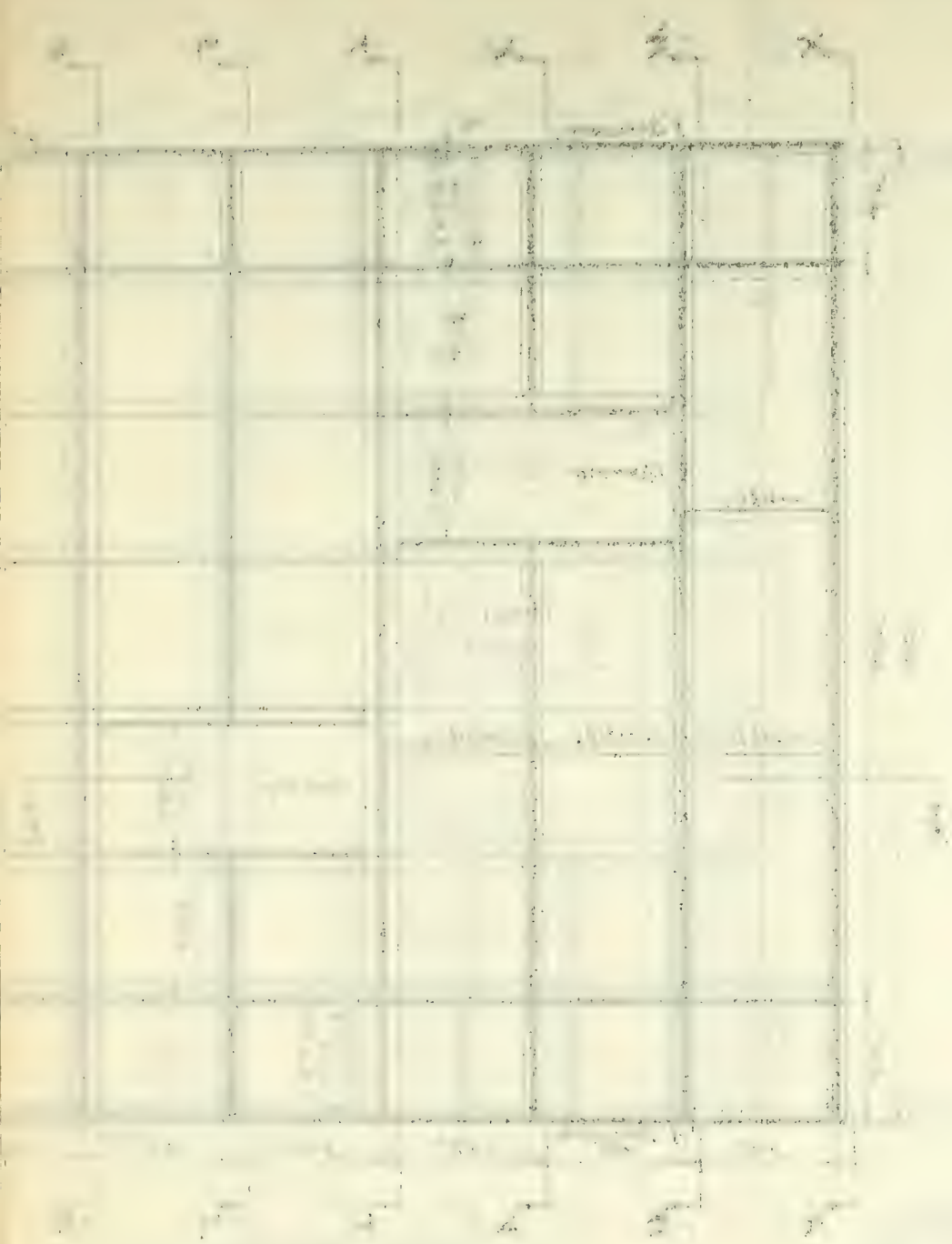
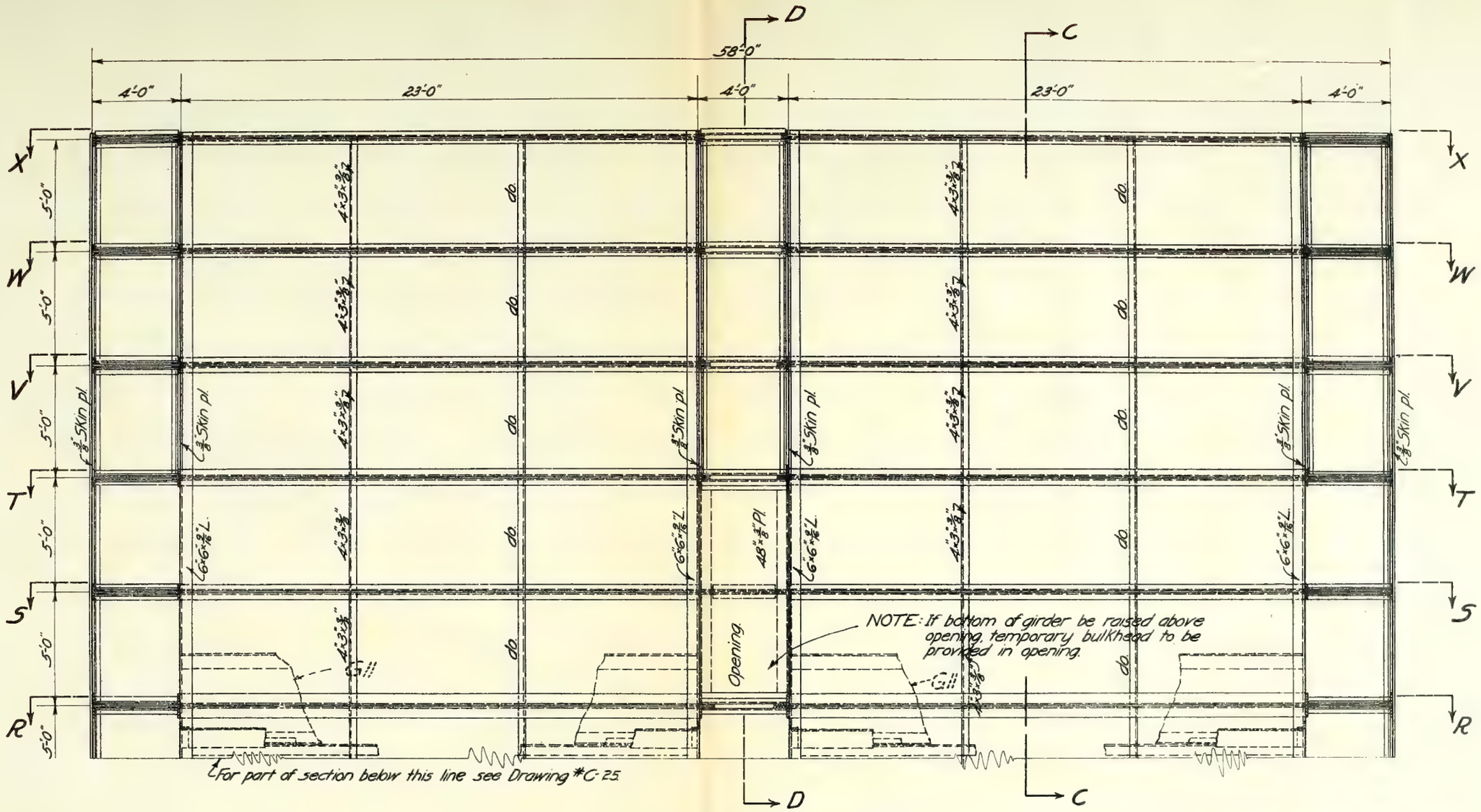




PART SECTION E-E.

ELEVATION WEST END WALL.

NOTE: Skin plates not shown in elevation.

REFERENCE NOTES.

For Plan and finished structure see drawings No. C-19 to C-21
" Section C-C " drawing " C-22
" " D-D " " " C-23
" Sections R-R, S-S, T-T, V-V, W-W & X-X see dwg. " C-30
" Schedule showing sizes of members " " " C-31
" Detail of Skin Plates see drawings " C-32 to C-37

ROUTE NO. 33

SECTION NO. 2

CONTRACT DRAWING NO. C-24

DATE MARCH 14, 1914

CHIEF ENGINEER

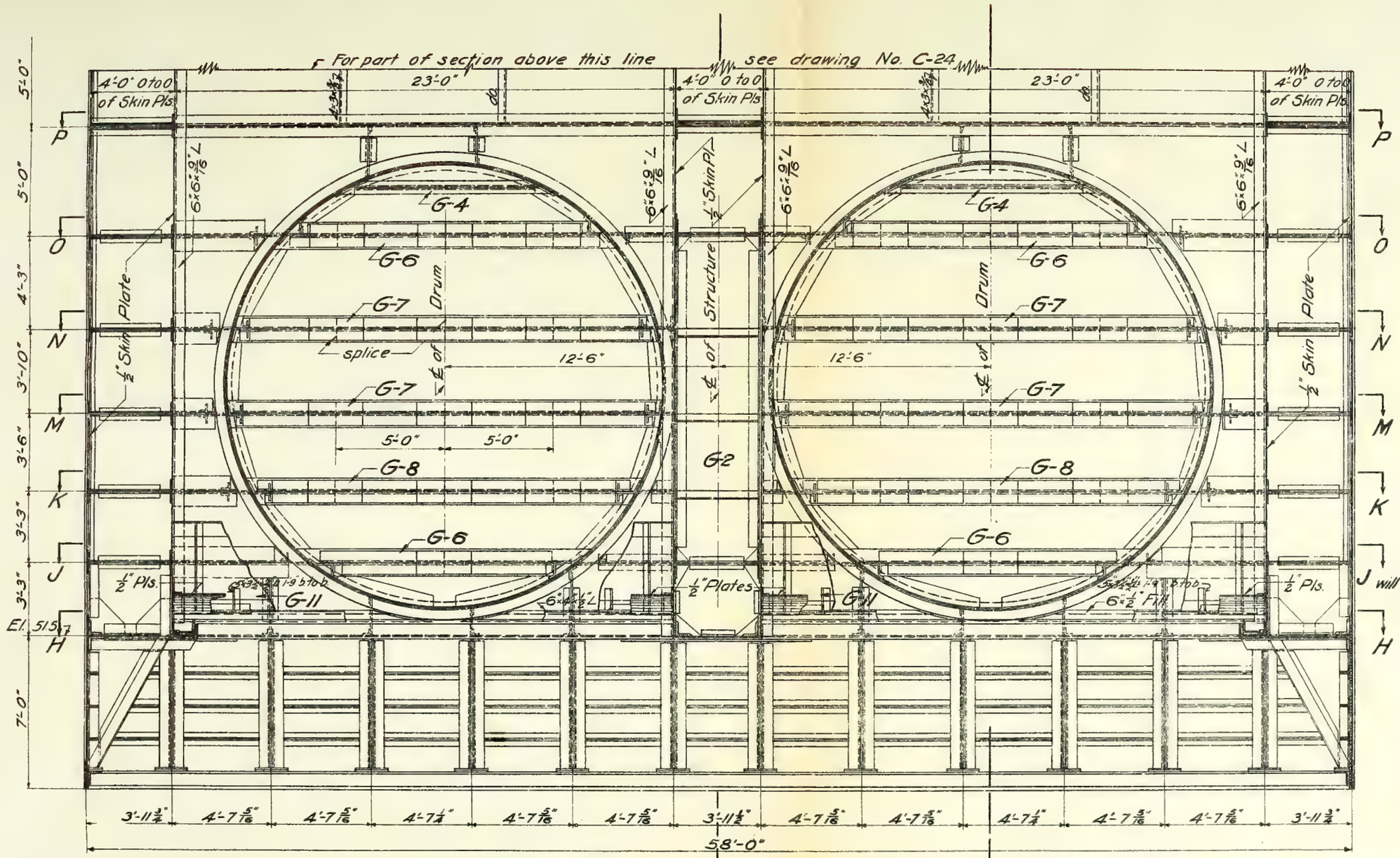
SCALE 0 1 2 3 FEET

DRAWN BY Cattano

CHECKED BY Finkelstein

64463

M.B. BROWN PRINTING & BINDING CO., N.Y.



NOTE: Skin plates not shown in elevation.

PART SECTION E-E.

ELEVATION WEST END WALL.

GENERAL NOTES.

The exterior skin-plates shall be caulked from bottom to top. The interior skin-plates, including both sides of the skin-plates of the central cross wall, shall be caulked below the upper position of the airtight chamber roof. The caulking shall be watertight where it will be exposed to water pressure only, and airtight where it will be exposed to air pressure during the sinking of the shaft and construction of tunnels.

All openings that cannot be made watertight by caulking, are to be plugged with metal plugs and made watertight.

The Bulkheads closing the shield openings and the cross wall openings, and the roofs of the working chambers, will not form part of the completed work, and will be considered plant.

Grout holes in steel to be provided as required.

Rivet spacing in caulked work shall not exceed 4 inches.

REFERENCE NOTES.

For Plan and finished structure		see drawings	No. C-19 to C-21	For Sections M-M & N-N		see drawing No.	C-28
"	Section C-C	" drawing	" C-22	" " K-K & O-O		" " "	C-29
"	" D-D	" "	" C-23	" Section P-P		" " "	C-30
"	" H-H	" "	" C-26	" Schedule showing sizes of members		" " "	C-31
"	" J-J	" "	" C-27	" Detail of Skin Plates		" drawings "	C-32 to C-37

ROUTE NO. 33

SECTION NO. 2

CONTRACT DRAWING NO. C-25

DATE MARCH 14, 1914

Alfred Craven
CHIEF ENGINEER

DRAWN BY Cattano
CHECKED BY Finklestein

SCALE 0 1 2 3 FEET

64469

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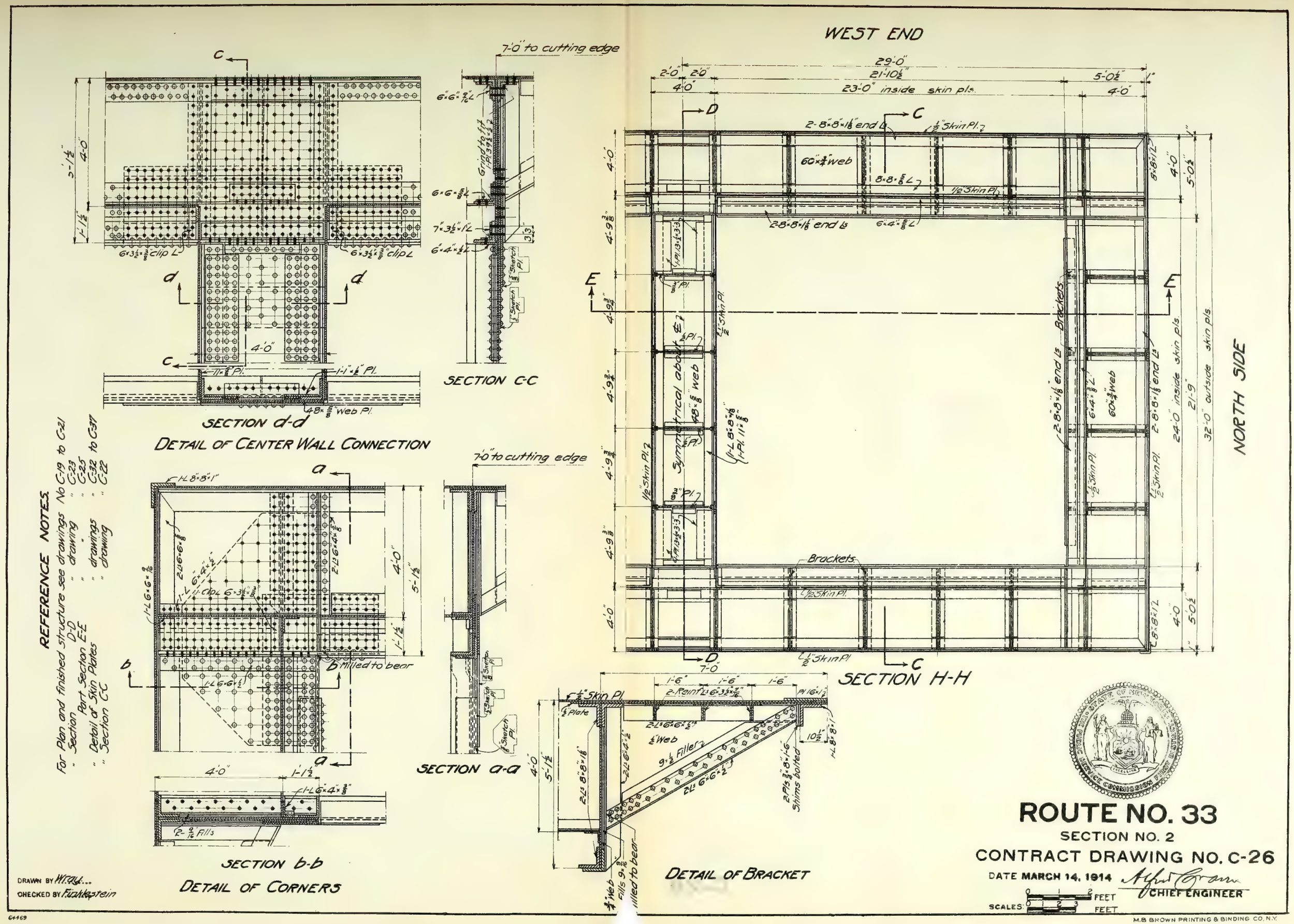
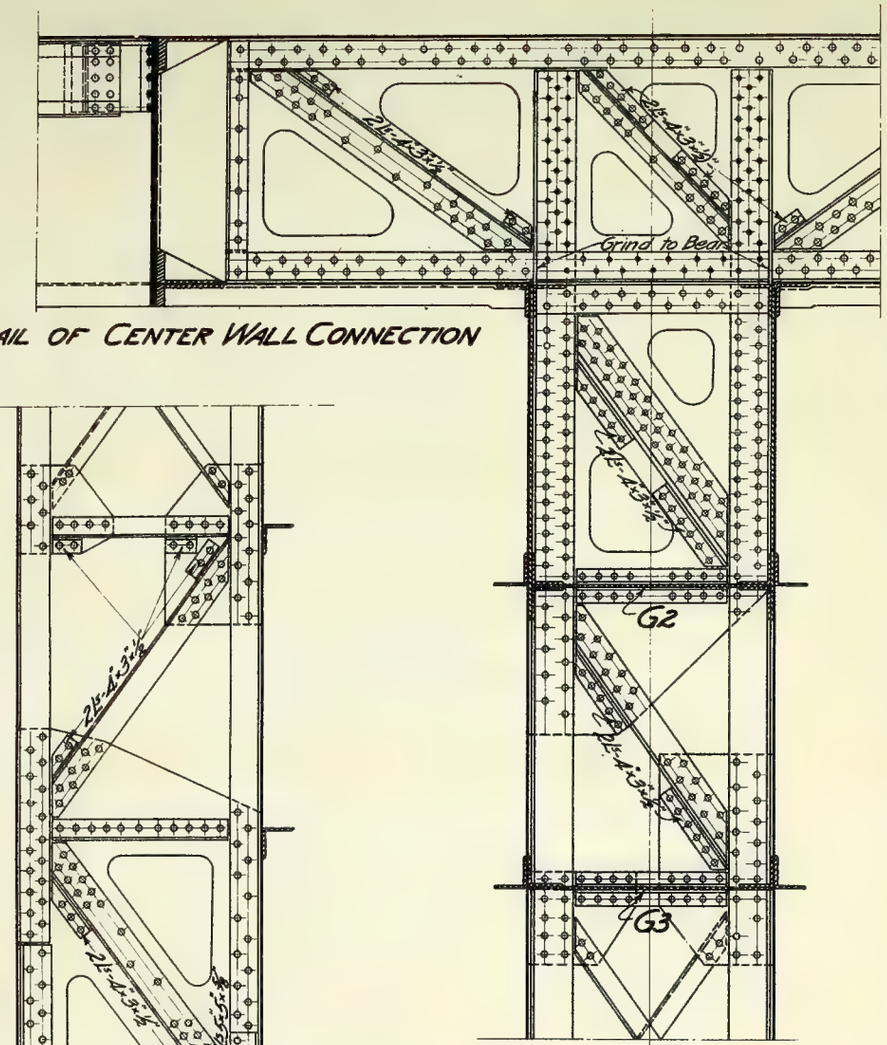
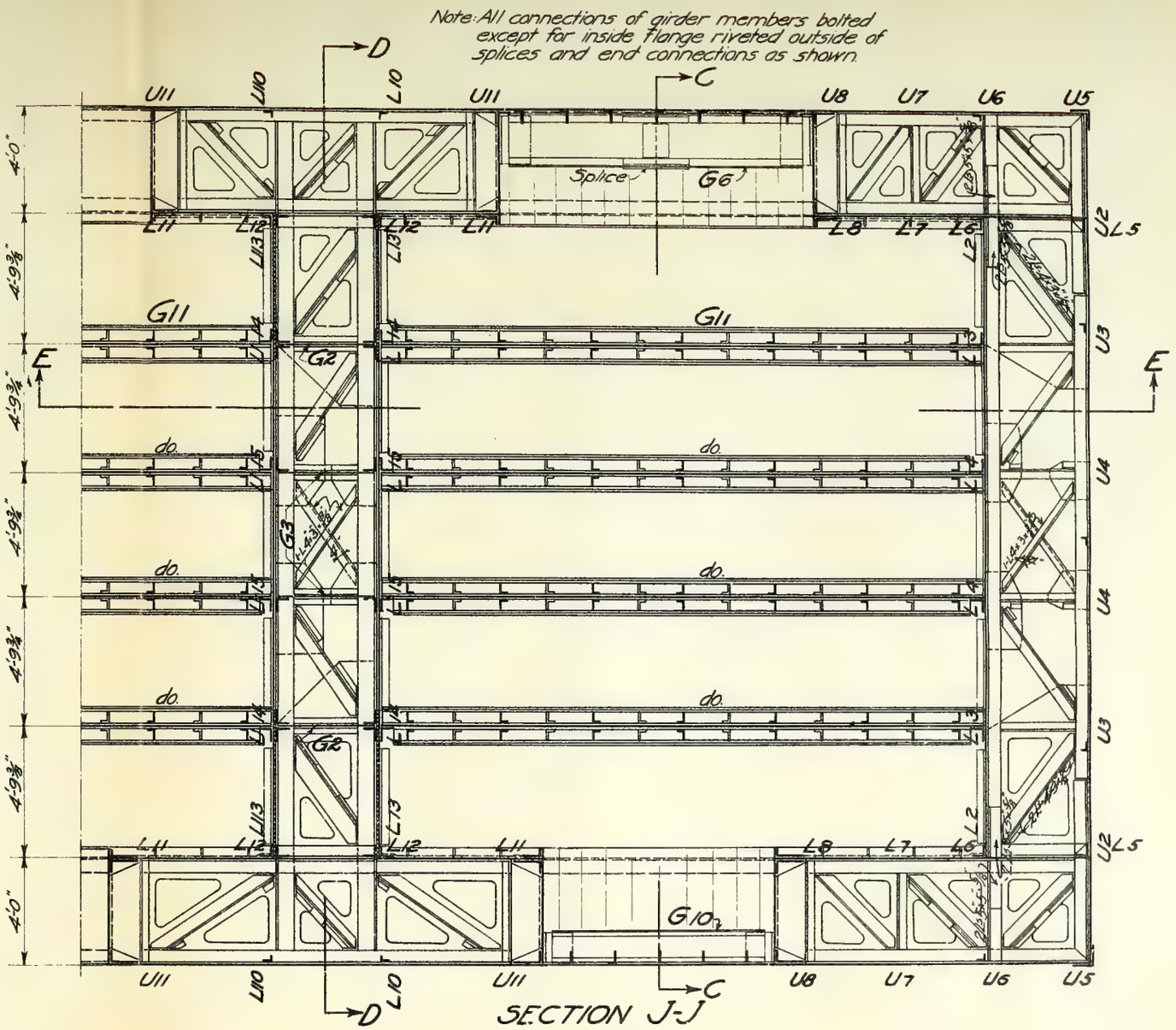

WEST END
NORTH SIDE
SECTION H-H
SECTION d-d
SECTION C-C
DETAIL OF CENTER WALL CONNECTION
SECTION a-a
SECTION b-b
DETAIL OF CORNERS
DETAIL OF BRACKET
REFERENCE NOTES
For Plan and finished structure see drawings No C-19 to C-21
" Section D-D " drawing " C-23
" Part Section E-E " drawings " C-25
" Detail of Skin Plates " drawings " C-32 to C-37
" Section C-C " drawing " C-22
23'-0" inside skin pls.
24'-0" inside skin pls.
32'-0" outside skin pls.
Brackets
Milled to bear
DRAWN BY W.T.G.
CHECKED BY F. Finkelstein
ROUTE NO. 33
SECTION NO. 2
CONTRACT DRAWING NO. C-26
DATE MARCH 14, 1914
CHIEF ENGINEER
SCALES
FEET
FEET
M.B. BROWN PRINTING & BINDING CO. N.Y.

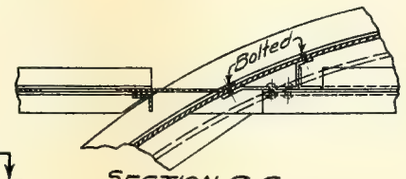


DETAIL OF CENTER WALL CONNECTION

DETAIL OF CORNERS



SECTION J-J



SECTION a-a

Note:- ½" Gusset Plates.
Rivets- ⅞" diam.

REFERENCE NOTES.

For Plan and finished structure see drawings No. C-19 to C-21
" Section D-D " drawing " C-23
" Part " E-E " " " C-25
" Schedule showing sizes of members see dwg. " C-31
" Detail of Skin Plates see drawings " C-32 to C-37
" Section C-C " " C-22

ROUTE NO. 33

SECTION NO. 2

CONTRACT DRAWING NO. C-27

DATE MARCH 14, 1914

SCALE 0 1 2 FEET / 0 2 3 FEET

CHIEF ENGINEER

DRAWN BY Wray...
CHECKED BY Finkelstein

64469

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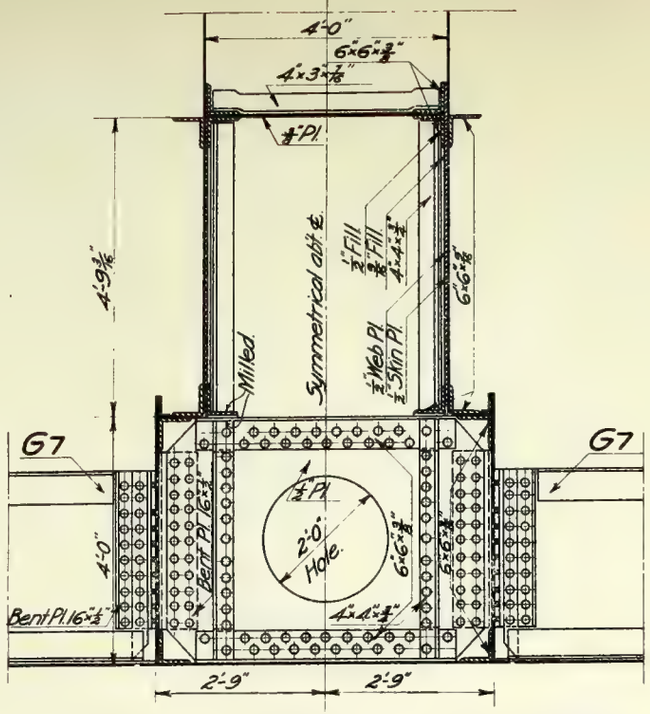
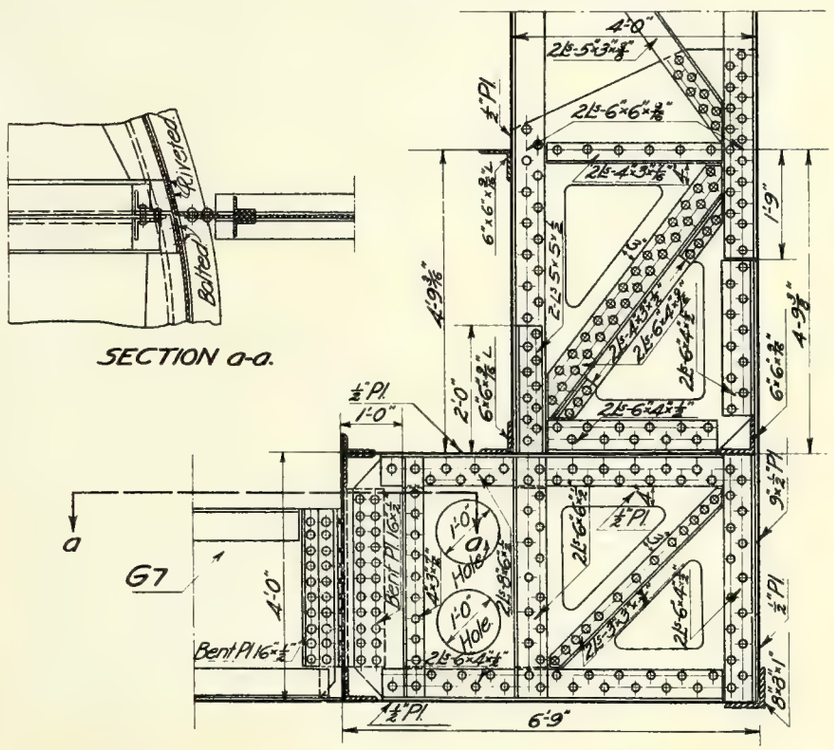
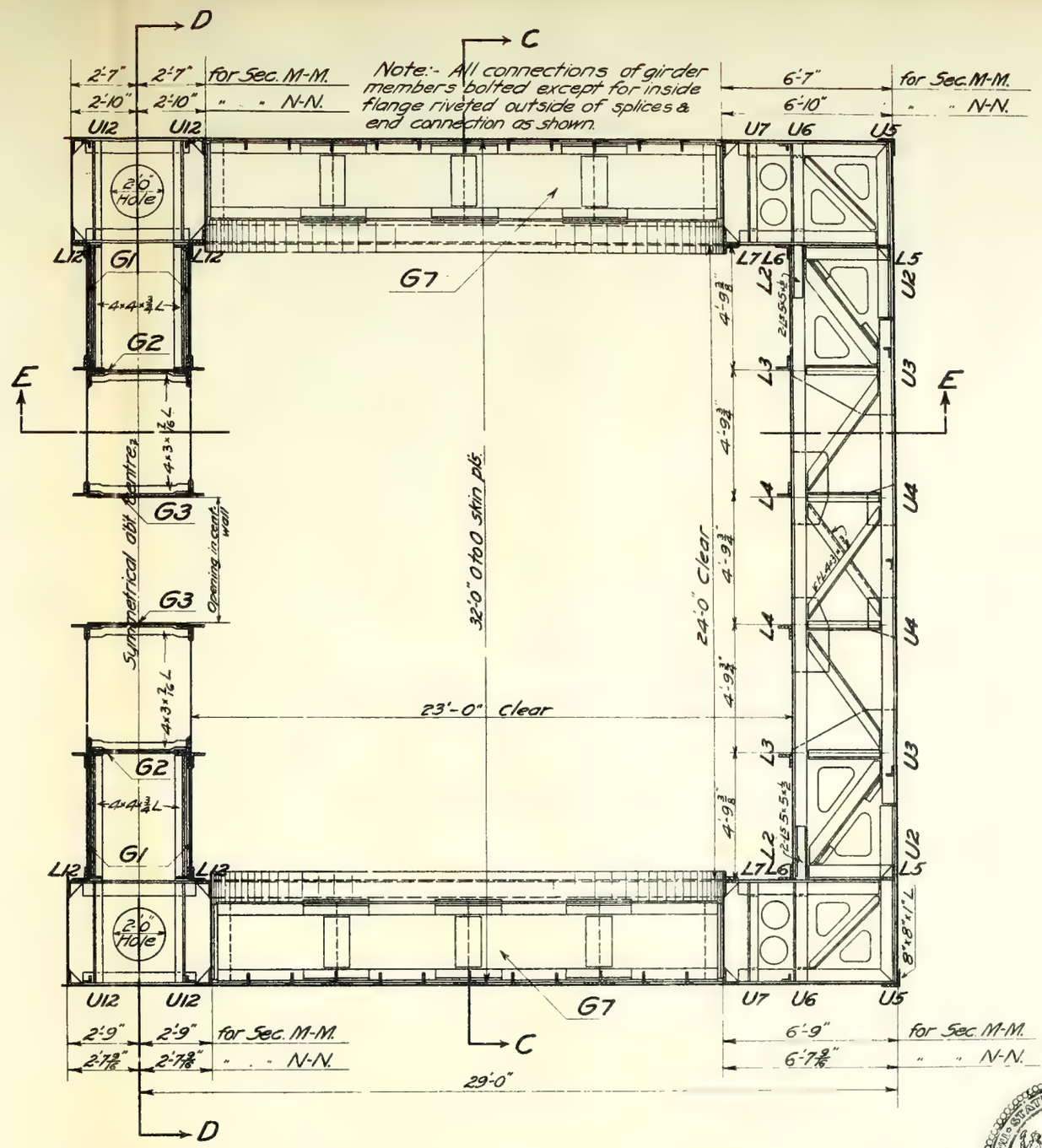


DETAIL OF CENTER-WALL CONNECTION.



SECTION a-a.

DETAIL OF CORNERS.



SECTION M-M as shown and noted.
SECTION N-N " " "

REFERENCE NOTES.

For Plan and finished structure see drawings No. C-19 to C-21
" Section D-D " drawing " C-23
" Part " E-E " " " C-25
" Schedule showing sizes of members see dwg. " C-31
" Detail of Skin Plates see drawings " C-32 to C-37
" Section C-C see drawing " C-22

ROUTE NO. 33

SECTION NO. 2

CONTRACT DRAWING NO. C-28

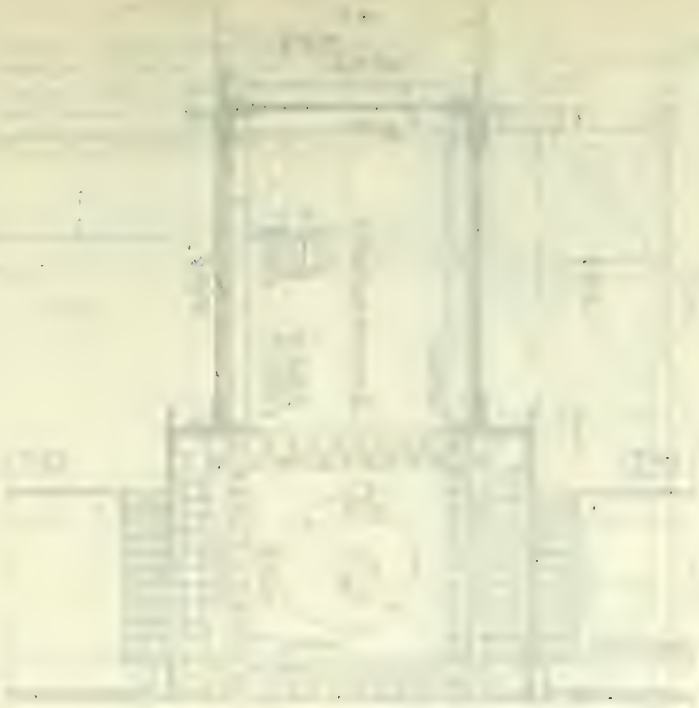
DATE MARCH 14, 1914

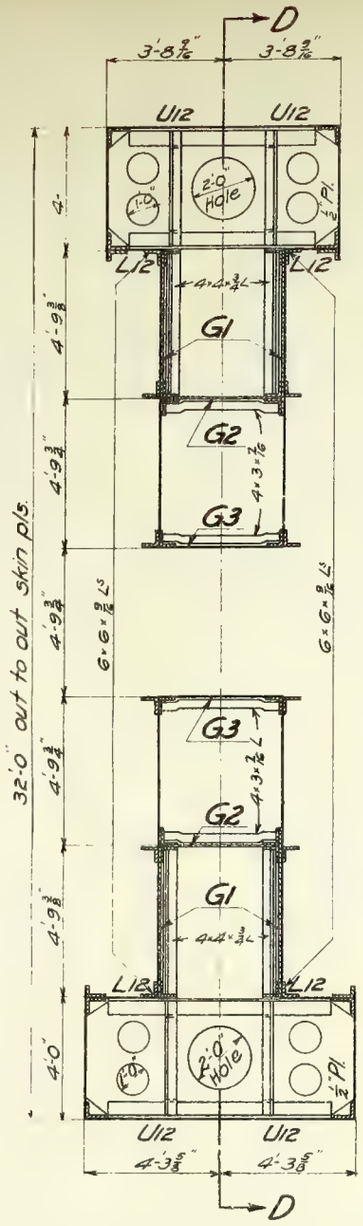
SCALES 0 1 2 FEET
0 1 2 3 FEET

CHIEF ENGINEER

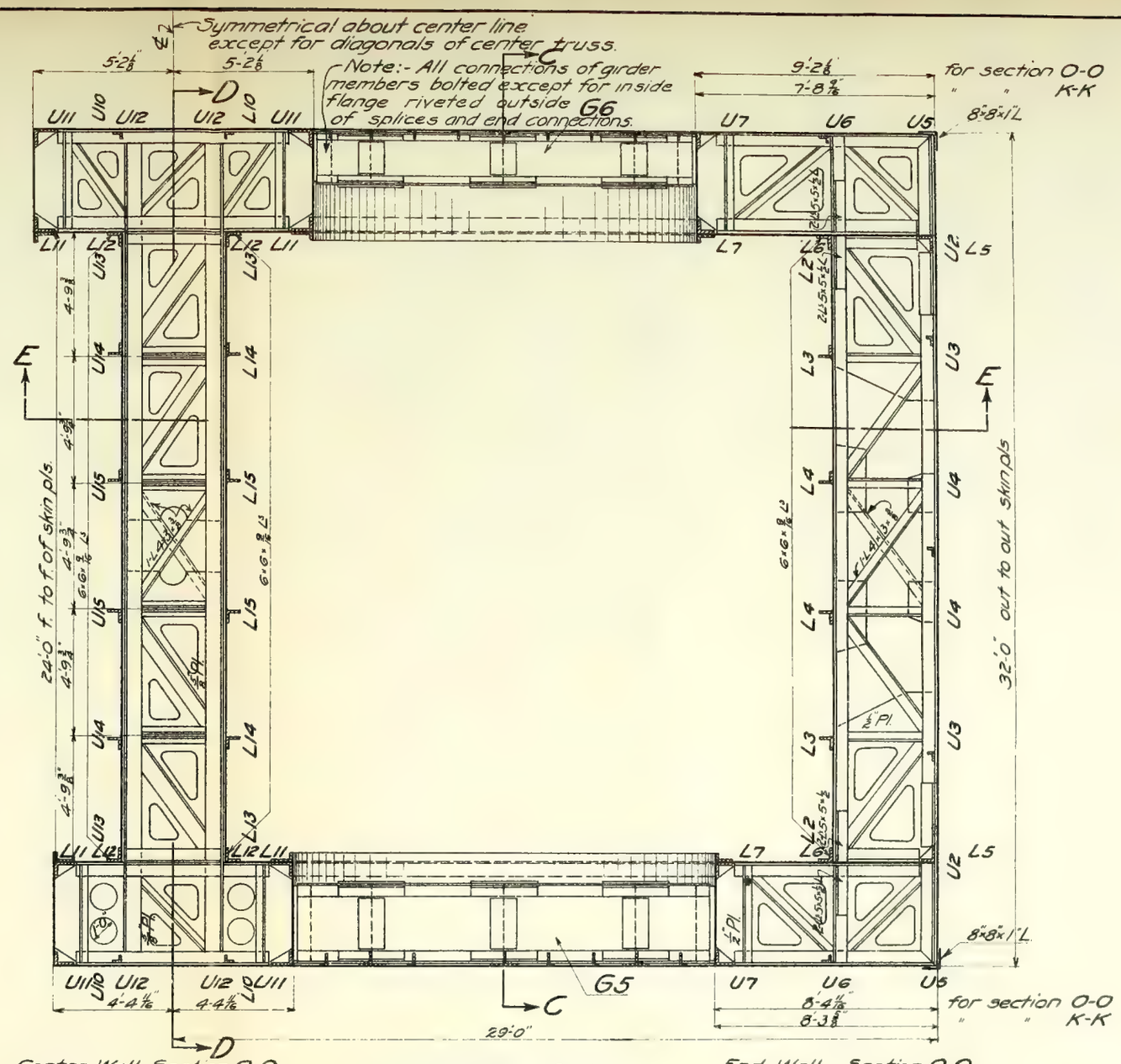
DRAWN BY Wray
CHECKED BY Eckelstein

M.B. BROWN PRINTING & BINDING CO. N.Y.





Center Wall Section K-K



Center Wall Section O-O

SECTION O-O

End Wall Section O-O
" " " K-K same except as noted.

Note: 1/2" Gusset Plates
Rivets 7/8" dia.

REFERENCE NOTES.

For Plan and finished structure see drawings No. C-19 to C-21
" Section D-D " drawing " C-23
" Part " E-E " " " C-25
" Schedule showing sizes of members see dwg. " C-31
" Detail of Skin Plates see drawings C-32 to C-37
" Section C-C " " " C-22

ROUTE NO. 33

SECTION NO. 2

CONTRACT DRAWING NO. C-29

DATE MARCH 14, 1914

CHIEF ENGINEER

SCALE 0 1 2 3 FEET

DRAWN BY Wray

CHECKED BY Finkelstein

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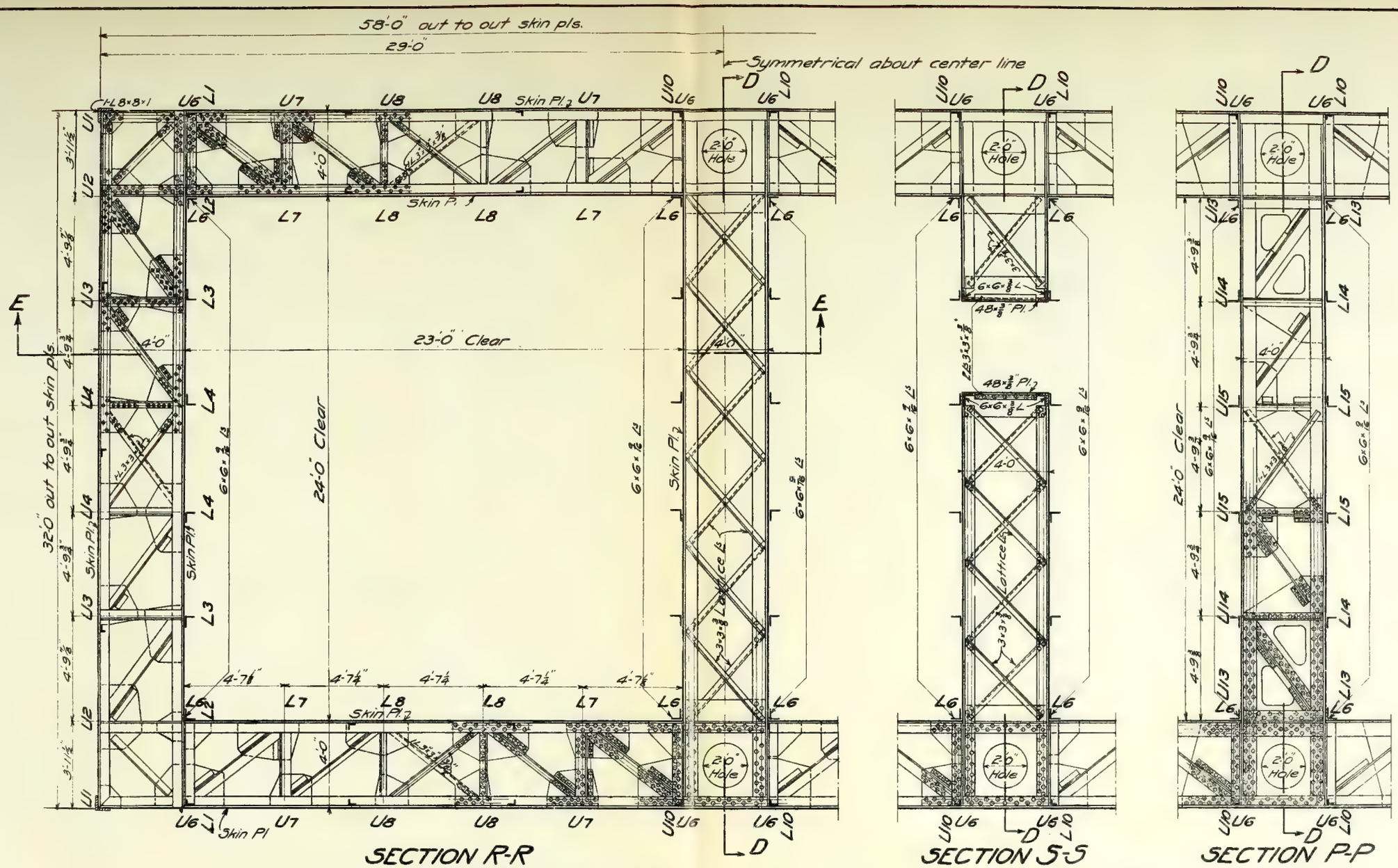


Sections T-T, W-W and X-X similar to sect. R-R

Parts not shown similar to section R-R.
Section V-V opp. hand to section S-S

Parts not shown similar to section R-R

NOTE

$\frac{3}{4}$" Rivets for sections V-V, W-W & X-X; all others $\frac{7}{8}$".
Gusset plates $\frac{1}{2}$" thick for sections P-P, R-R, S-S and T-T and $\frac{3}{8}$" thick for sections V-V, W-W and X-X
All clip ∠s 4"×3"×$\frac{1}{2}$"

REFERENCE NOTES.

For Plan and finished structure see drawings No C-19 to C-21

"	Section	D-D	"	"	" C-23
" Part	"	E-E	"	"	" C-24
" "	"	E-E	"	"	" C-25
" Schedule showing sizes of members see dwg					" C-31
" Detail of Skin Plates		see drawings			" C-32 to C-37

ROUTE NO. 33

SECTION NO. 2

CONTRACT DRAWING NO. C-30

DATE MARCH 14, 1914

CHIEF ENGINEER

SCALE 0 1 2 3 FEET

DRAWN BY Booth

CHECKED BY Finkelstein

M.B BROWN PRINTING & BINDING CO. N.Y.

SIDE WALL TRUSSES

Section	U1-U1	L1-L1	U1-L1	U2-L1	U2-L2	U2-L3	U2-U3	U3-U3	U3-L2	L2-L2	U3-L3	U3-L4	U4-L4
J-J					2-Ls 6×4×½		2-Ls 6×4×½ 1-Pl. 9×½	2-Ls 6×6×½	2-Ls 6×4×9/16	2-Ls 6×6×½	2-Ls 4×3×7/16	2-Ls 5×3×⅜	2-Ls 4×3×7/16
K-K					do		do	2-Ls 6×6×9/16	do	2-Ls 6×6×9/16	do	do	do
M-M					do		do	do	do	do	do	do	do
N-N					do		do	do	do	do	do	do	do
O-O					do		do	do	2-Ls 6×6×½	do	do	2-Ls 5×3×7/16	do
P-P	2-Ls 6×6×7/16	2-Ls 8×6×½	2-Ls 6×6×⅜	2-Ls 4×4×⅜	2-Ls 8×6×9/16	2-Ls 6×6×½					2-Ls 6×4×½	2-Ls 4×3×7/16	2-Ls 4×3×⅜
R-R	2-Ls 6×6×⅜	2-Ls 6×6×7/16	2-Ls 6×4×7/16	do	2-Ls 6×6×9/16	2-Ls 6×3½×⅜					2-Ls 5×3½×7/16	do	do
S-S	2-Ls 6×4×⅜	2-Ls 6×3½×½	2-Ls 6×4×⅜	do	2-Ls 6×3½×½	2-Ls 6×3½×7/16					2-Ls 4×3×½	2-Ls 4×3×⅜	1-L 4×3×½
T-T	2-Ls 4×4×⅜	2-Ls 4×4×7/16	2-Ls 4×4×⅜	2-Ls 4×3×⅜	2-Ls 4×4×½	2-Ls 6×3½×⅜					2-Ls 4×3×⅜	1-L 4×3×7/16	1-L 4×3×⅜
V-V	2-Ls 4×3½×⅜	2-Ls 4×3½×⅜	2-Ls 4×3½×⅜	do	2-Ls 4×3½×⅜	1-L 4×4×7/16					1-L 4×4×7/16	1-L 3×3×⅜	1-L 3×3×⅜
W-W	2-Ls 4×3×⅜	2-Ls 4×3×⅜	2-Ls 3×3×⅜	2-Ls 3×3×⅜	2-Ls 3×3×⅜	1-L 3×3×⅜					1-L 3×3×⅜	do	do
X-X	do	do	do	do	do	do					do	do	do

END WALL TRUSSES AND CANTILEVERS

Section	U5-L5	U5-U7	L5-L7	L5-L8	U5-U8	U6-U6	L6-L6	U6-L5	U6-L6	U6-L7	U7-L7	U7-L8	U8-L8	Gusset Pls.
J-J	2-Ls 6×4×½ 1-Pl. 9×½			2-Ls 8×6×½	2-Ls 6×4×½			2-Ls 6×4×½	2-Ls 6×6×½ 2-Ls 5×5×5/16	2-Ls 6×4×½	2-Ls 4×3×½	2-Ls 6×4×⅜	1-L 4×3×7/16	½" thick
K-K	do	2-Ls 6×4×½	2-Ls 8×6×½					2-Ls 3×3×⅜	2-Ls 5×5×5/16 2-Ls 6×6×⅜	2-Ls 4×3×½	1-L 4×3×7/16			½" do
M-M	do	do	do					do	2-Ls 6×6×½		do			½" do
N-N	do	do	do					do	do		do			½" do
O-O	do	do	do					2-Ls 4×3×7/16	2-Ls 6×6×½ 2-Ls 5×5×½	2-Ls 4×3×½	do			½" do
P-P						2-Ls 6×6×⅜	2-Ls 8×6×9/16		2-Ls 6×6×½	2-Ls 6×6×⅝	2-Ls 6×6×9/16	2-Ls 4×3×½	2-Ls 4×4×½	½" do
R-R						2-Ls 6×4×7/16	2-Ls 6×6×9/16		do	2-Ls 6×4×⅜	2-Ls 6×3½×9/16	do	2-Ls 4×3×½	½" do
S-S						2-Ls 6×4×⅜	2-Ls 6×3½×½		2-Ls 6×3½×½	2-Ls 6×3½×9/16	2-Ls 6×3½×½	1-L 5×3×½	1-L 6×3½×½	½" do
T-T						2-Ls 4×4×⅜	2-Ls 4×4×½		2-Ls 4×4×½	2-Ls 4×4×½	2-Ls 3½×3½×7/16	1-L 4×3×½	1-L 3½×3½×7/16	½" do
V-V						2-Ls 4×3½×⅜	2-Ls 4×3½×⅜		2-Ls 4×3½×½	1-L 4×3×½	1-L 4×4×7/16	1-L 3½×3½×7/16	do	⅜" do
W-W						2-Ls 4×3×7/16	2-Ls 4×3×7/16		2-Ls 3½×3½×7/16	1-L 3½×3½×7/16	1-L 3½×3½×7/16	do	do	⅜" do
X-X						do	do		do	do	do	do	do	⅜" do

GIRDER SCHEDULE

Mark	Web	Total Flange Angles	Cover Plates
G1	1-Pl. 64×½	1-L 6×6×7/16 1-L 6×6×⅜	
G2	1-Pl. 48×⅜	2-Ls 6×6×⅜	
G3	1-Pl. 48×½	2-Ls 6×6×⅜	
G4	1-Pl. 15×⅜	4-Ls 3×3×⅜	
G5	1-Pl. 36×⅜	4-Ls 6×6×⅜	1-Pl. 14×½
G6	1-Pl. 24×⅜	4-Ls 6×4×⅜	do
G7	1-Pl. 36×7/16	4-Ls 6×6×11/16	do
G8	1-Pl. 36×⅜	4-Ls 6×6×9/16	do
G9	1-Pl. 36×⅜	4-Ls 6×6×7/16	do
G10	1-Pl. 15×⅜	4-Ls 4×3×7/16	
G11	1-Pl. 48×7/16	2-Ls 8×8×½ 2-Ls 6×6×½	1-15[-33#

CENTER WALL TRUSSES AND CANTILEVERS

Section	U10-U10, L10-L10	U10-L10	U10-U13	L10-L13	U11-U11	U11-L11	U11-L12	L11-L12	U12-U12	L12-L12	U12-L12	U13-L10	U13-U13, L13-L13	U13-L13	U14-L13	U14-L14	U15-L14	U15-L15	Gusset Pls
J-J			2-Ls 8×8×5/8	2-Ls 8×8×5/8	2-Ls 6×4×½	1-L 4×3×7/16	2-Ls 6×4×½	2-Ls 6×4×½		2-Ls 6×4×½		2-Ls 5×3½×9/16	2-Ls 8×8×5/8 1-Pl. 23×½	2-Ls 6×4×½	2-Ls 8×8×11/16	4-Ls 3×3×7/16	2-Ls 6×6×11/16	4-Ls 3×3×7/16	⅝" thick
K-K									2-Ls 6×6×⅜	2-Ls 6×6×⅜	2-Ls 4×4×¾								½" do
M-M									do	do	do								½" do
N-N									do	do	do								½" do
O-O			2-Ls 8×8×½	2-Ls 8×8×½	2-Ls 6×4×½	1-L 4×3×7/16	2-Ls 4×3×7/16	2-Ls 6×4×½		2-Ls 6×4×½		2-Ls 4×3×7/16	2-Ls 8×8×½ 1-Pl. 23×½	2-Ls 6×4×½	2-Ls 8×8×⅞	4-Ls 3½×3½×½	2-Ls 6×4×½	4-Ls 3×3×⅞	⅝" do
P-P	2-Ls 8×8×¾	2-Ls 5×3½×⅜												2-Ls 6×6×⅝ 2-Ls 8×6×7/16	2-Ls 6×6×½	2-Ls 4×4×⅜	2-Ls 6×4×7/16	2-Ls 4×3×7/16	½" do
R-R	2-Ls 8×6×⅝	do																	½" do
S-S	2-Ls 6×3½×½	2-Ls 4×3×⅜																	½" do
T-T	2-Ls 6×6×⅝	do																	½" do
V-V	2-Ls 4×4×⅜	do																	⅜" do
W-W	2-Ls 3½×3×⅜	2-Ls 3×3×⅜																	⅜" do
X-X	do	do																	⅜" do

REFERENCE NOTES.

For Section	J-J	see drawing	No	C-27
" " S	M-M & N-N	" "	"	C-28
" "	K-K & O-O	" "	"	C-29
" " S	P-P, R-R, S-S, T-T, V-V, W-W & X-X	" "	"	C-30

ROUTE NO. 33

SECTION NO. 2

CONTRACT DRAWING NO. C-31

DATE MARCH 14, 1914

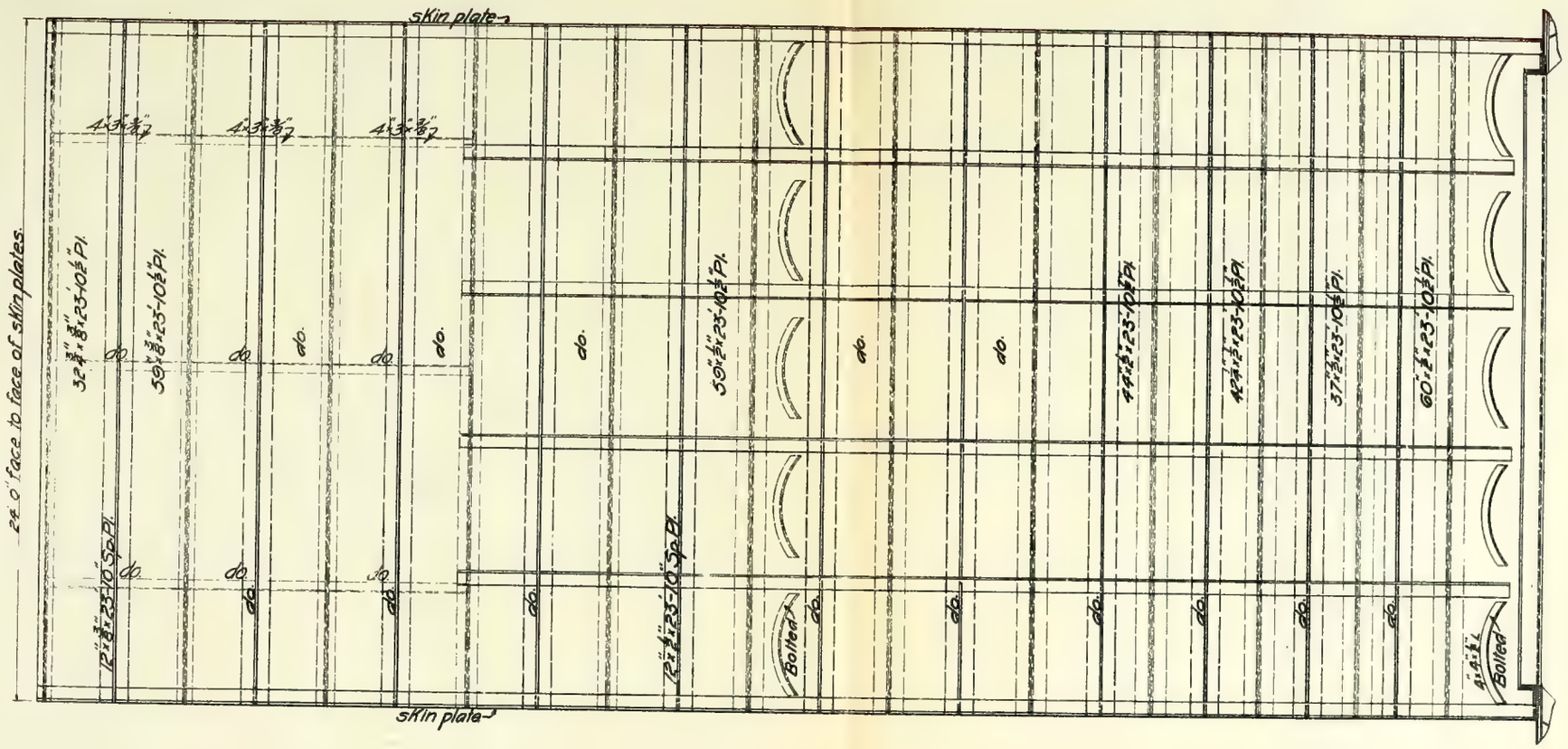
CHIEF ENGINEER

DRAWN BY Wray-Booth

CHECKED BY Finkelstein

64469

M.B. BROWN PRINTING & BINDING CO. N.Y.



SKIN PLATES
INSIDE FACE OF SIDE WALLS.

ROUTE NO. 33

SECTION NO. 2

CONTRACT DRAWING NO. C-32

DATE MARCH 14, 1914

CHIEF ENGINEER

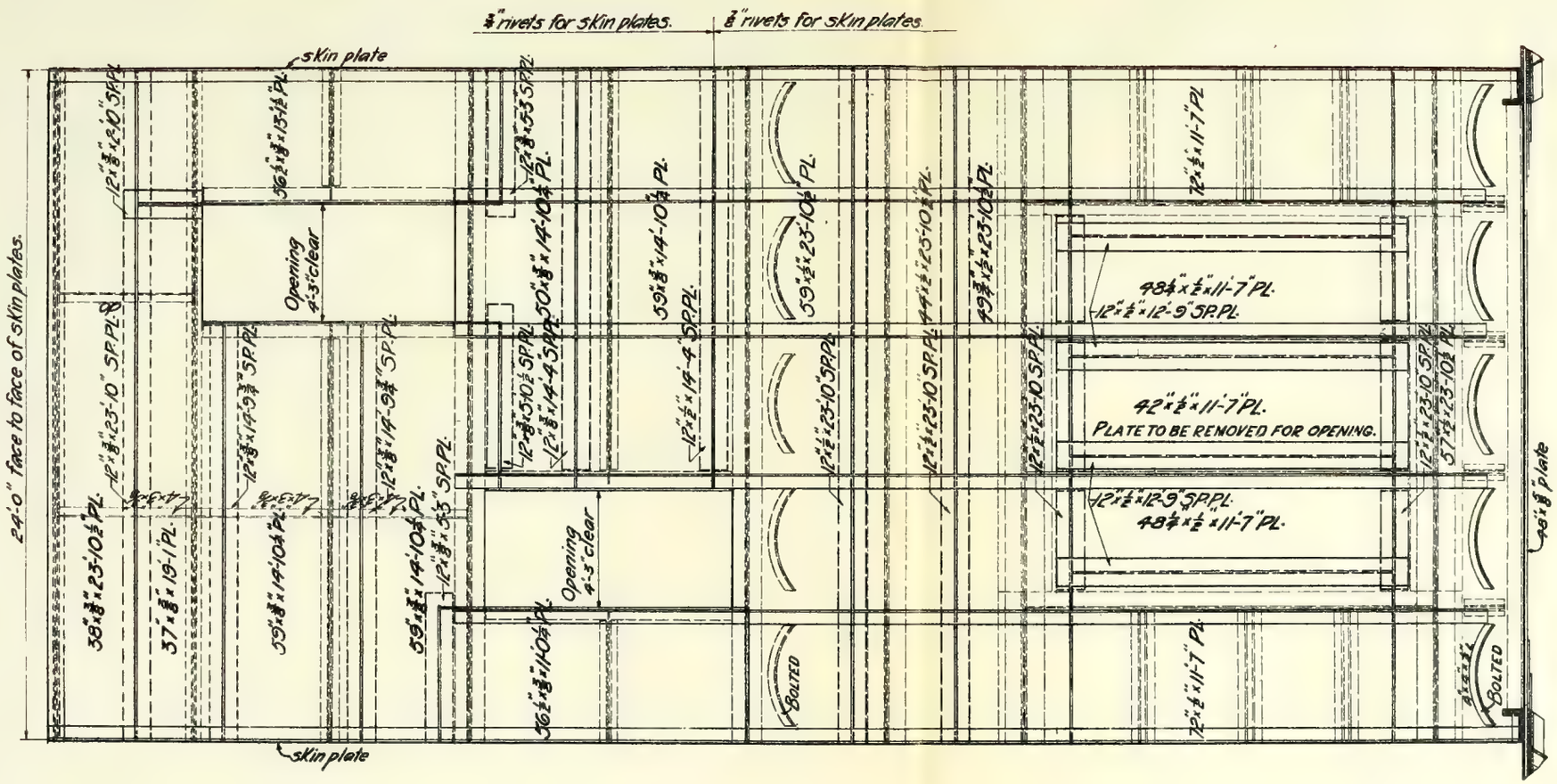
SCALE 0 1 2 3 FEET

DRAWN BY Nicholson

CHECKED BY Finkelstein

64469

M.B. BROWN PRINTING & BINDING CO. N.Y.



SKIN PLATES
CENTRE WALL.
Opposite side is opposite hand to that shown.

ROUTE NO. 33
SECTION NO. 2

CONTRACT DRAWING NO. C-33

DATE MARCH 14, 1914

CHIEF ENGINEER

SCALE 0 1 2 3 FEET

DRAWN BY Nicholson

CHECKED BY Finkelstein

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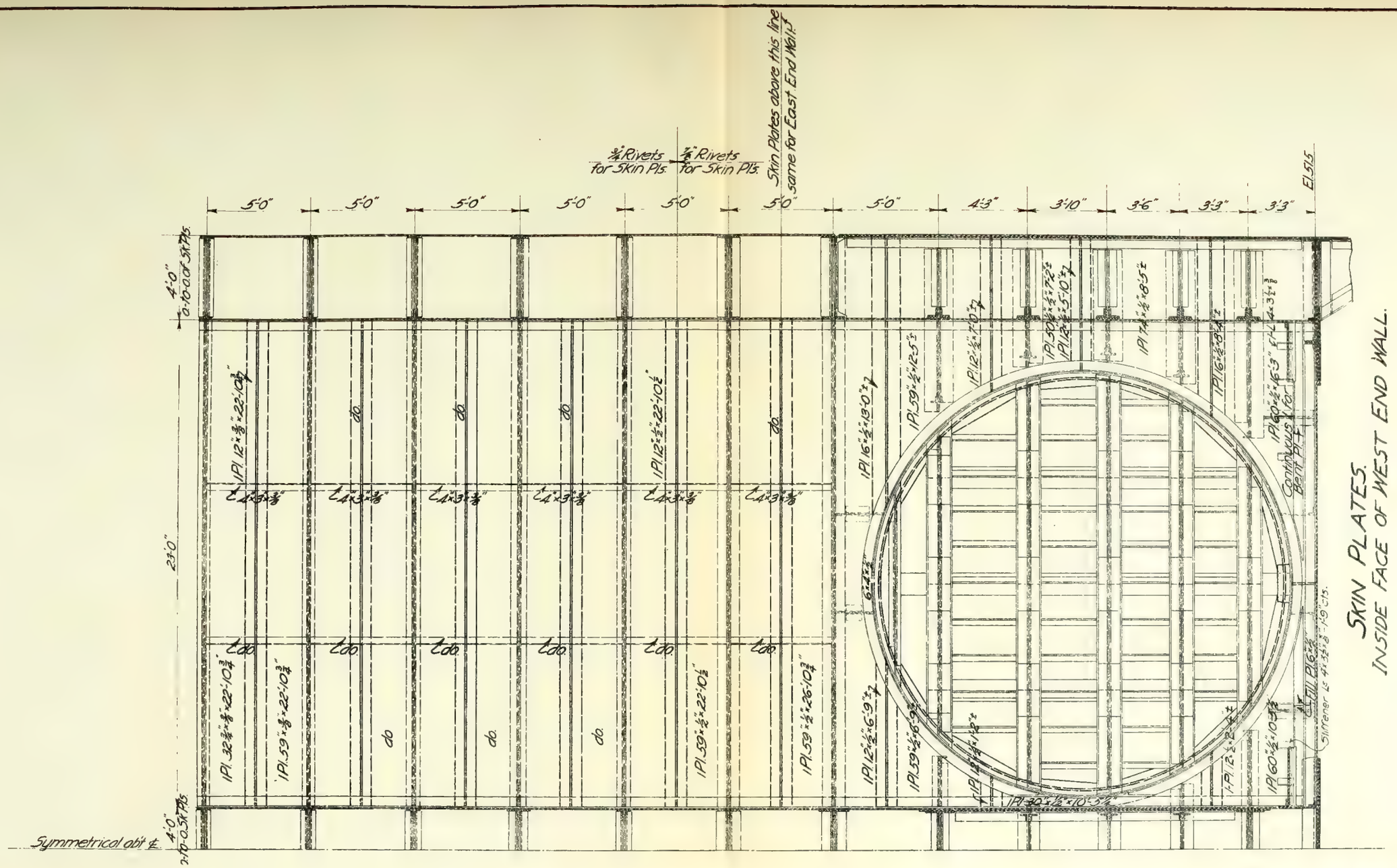
M.B. BROWN PRINTING & BINDING CO. INC.



SKIN PLATES.
INSIDE FACE OF WEST END WALL.

ROUTE NO. 33

SECTION NO. 2

CONTRACT DRAWING NO. C-34

DATE MARCH 14, 1914

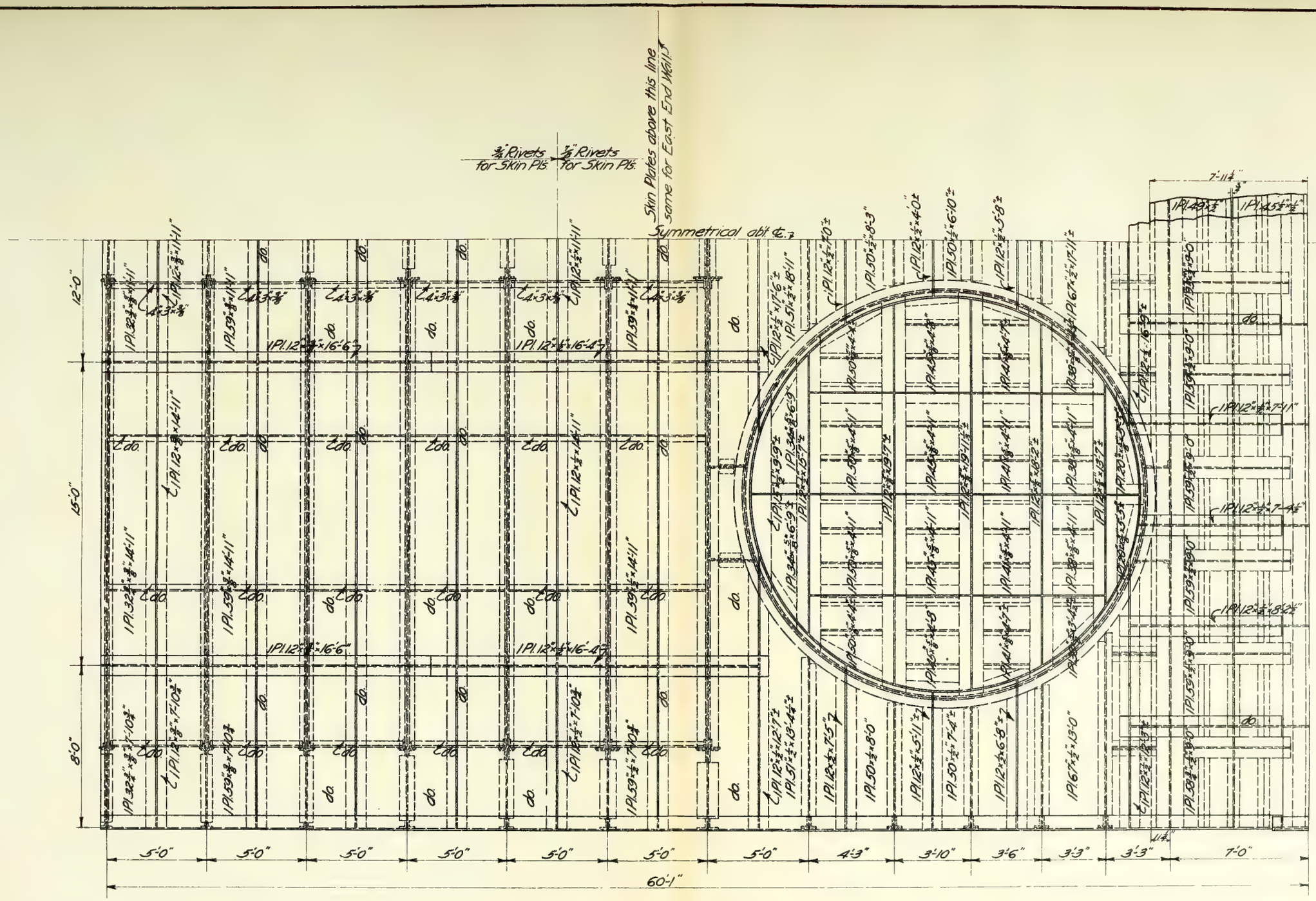
CHIEF ENGINEER

SCALE 0 1 2 3 FEET

DRAWN BY Cattano

CHECKED BY Nicholson

M.B. BROWN PRINTING & BINDING CO. N.Y.



SKIN PLATES.
OUTSIDE FACE OF WEST END WALL.

ROUTE NO. 33

SECTION NO. 2

CONTRACT DRAWING NO. C-35

DATE MARCH 14, 1914

CHIEF ENGINEER

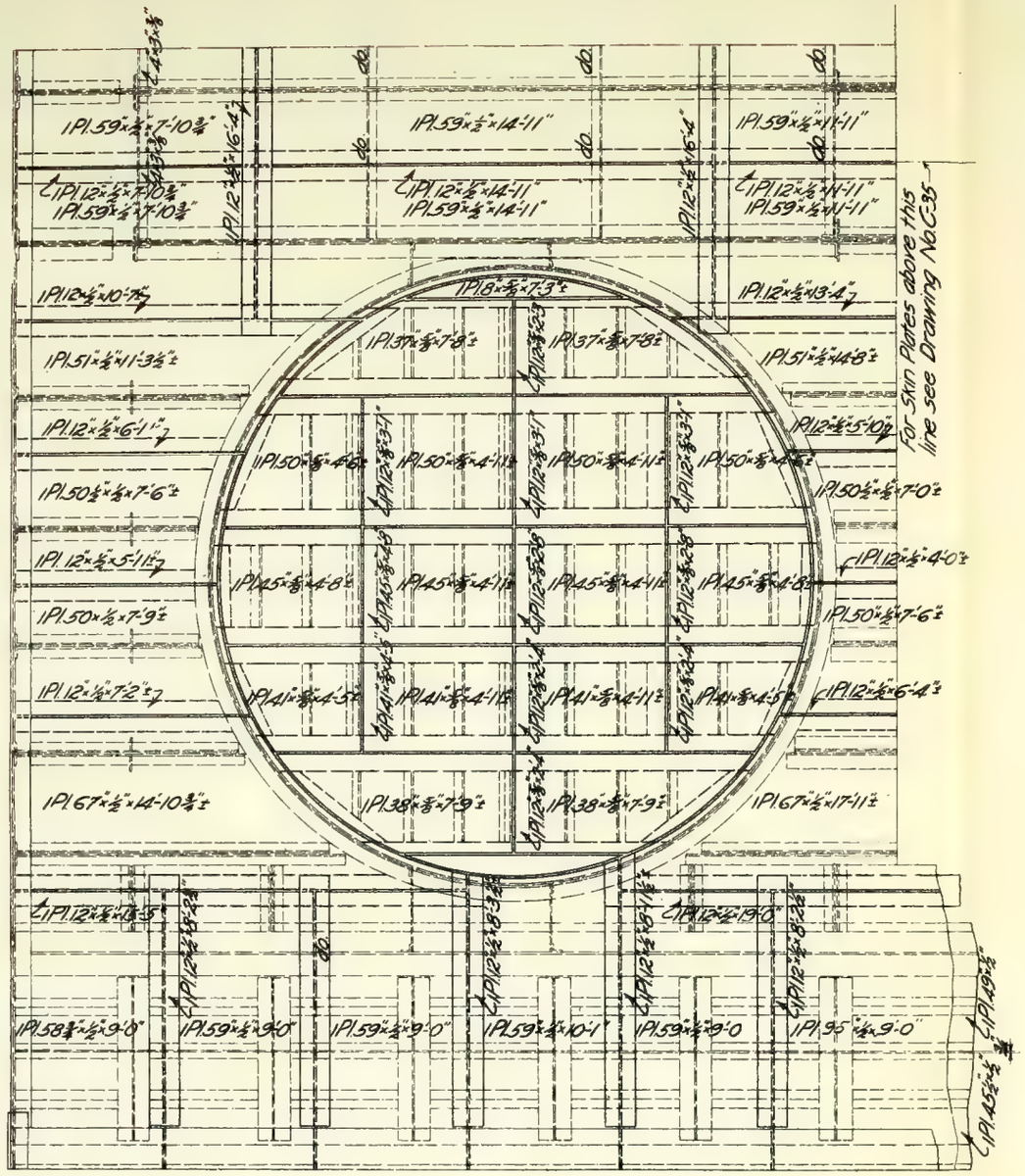
SCALE 0 1 2 3 FEET

DRAWN BY Cattano.

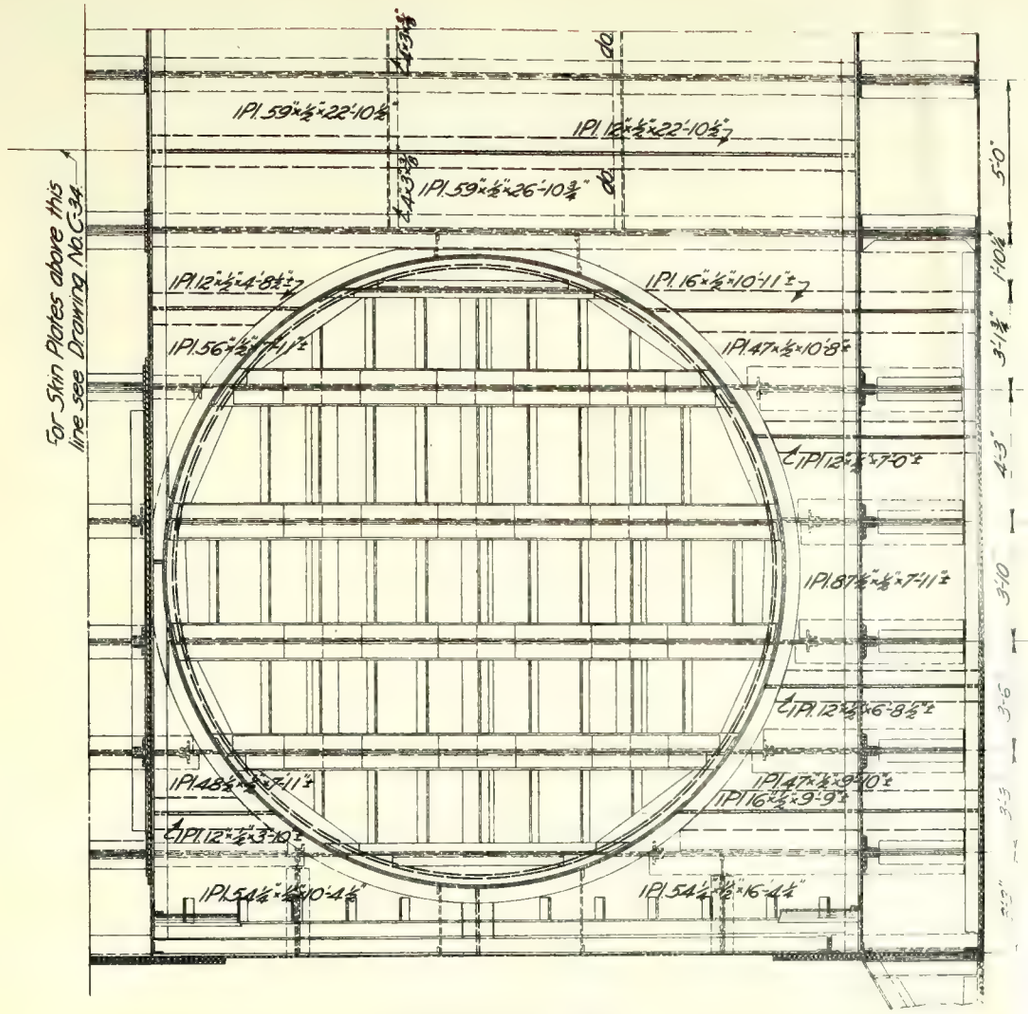
CHECKED BY Nicholson.

64469

M.B. BROWN PRINTING & BINDING CO. N.Y.



SKIN PLATES.
OUTSIDE FACE OF EAST END WALL.



SKIN PLATES.
INSIDE FACE OF EAST END WALL.

ROUTE NO. 33

SECTION NO. 2

CONTRACT DRAWING NO. C-36

DATE MARCH 14, 1914

CHIEF ENGINEER

SCALE 0 1 2 3 FEET

DRAWN BY Booth

CHECKED BY Nicholson

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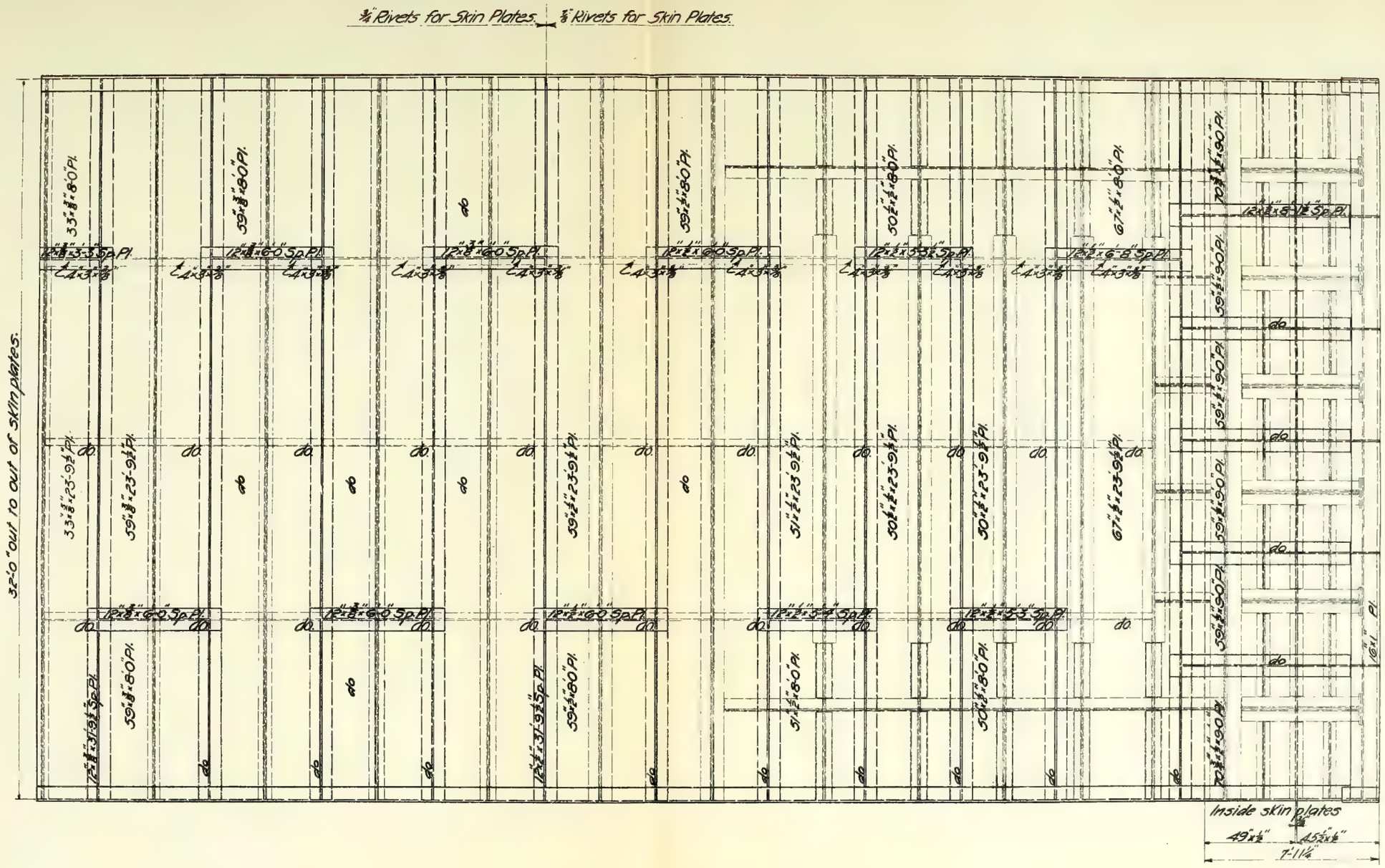

SKIN PLATES
OUTSIDE FACE OF SIDEWALLS.

ROUTE NO. 33

SECTION NO. 2

CONTRACT DRAWING NO. C-37

DATE MARCH 14, 1914

CHIEF ENGINEER

SCALE 0 1 2 3 FEET

DRAWN BY Nicholson.

CHECKED BY Finkelstein

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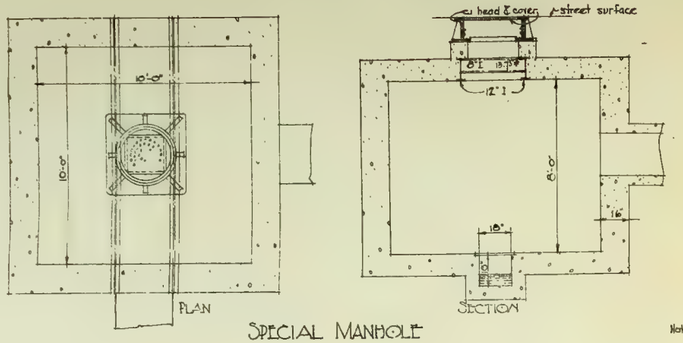
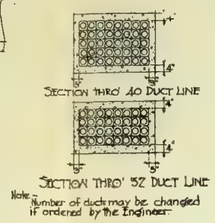
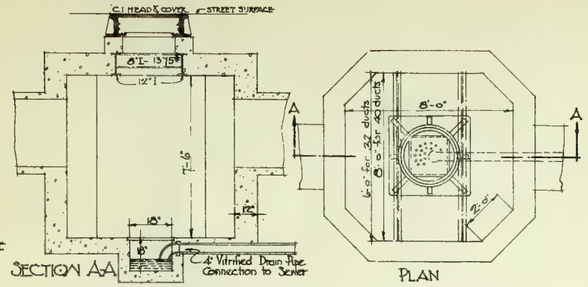


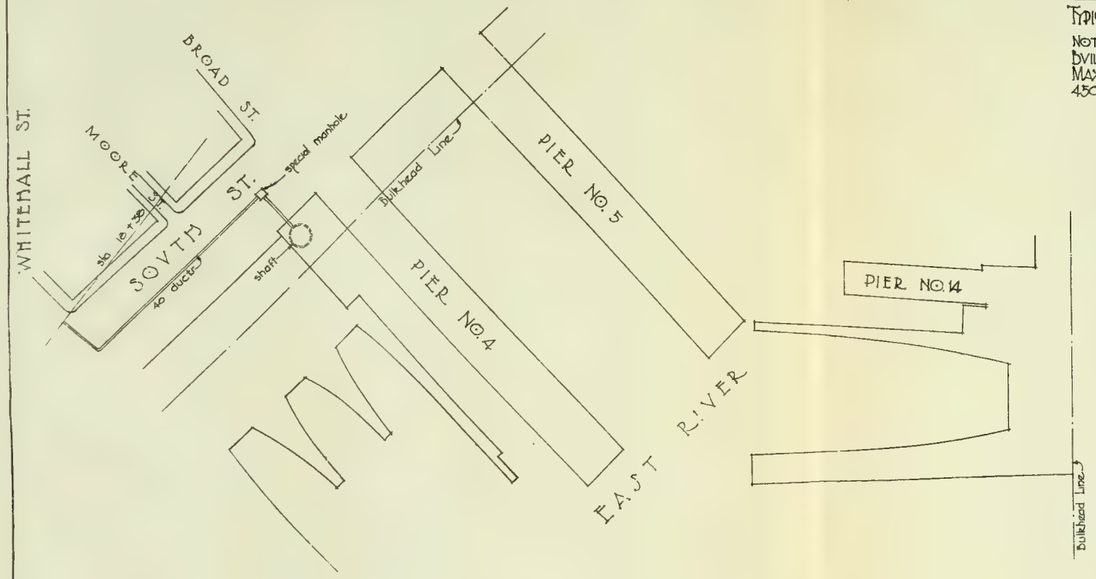
SPECIAL MANHOLE

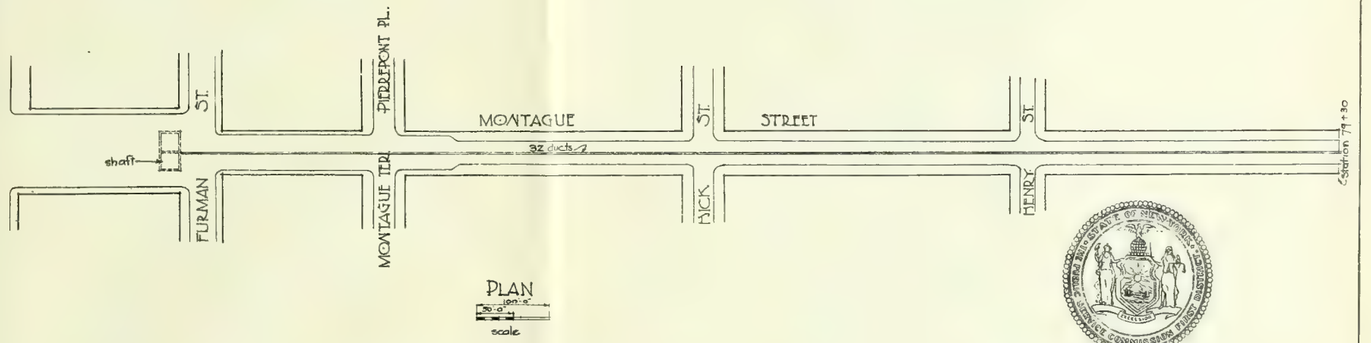




TYPICAL DUCT MANHOLE FOR STREET CONSTRUCTION

NOTE:-
BUILD A MANHOLE AT EVERY ANGLE IN THE LINE
MAXIMUN DISTANCE BETWEEN MANHOLES
450 FEET ON STRAIGHT LINES.





ROUTE No. 33

SECTION NO. 2

CONTRACT DRAWING NO. C-38

DATE- MAR. 14 1914

CHIEF ENGINEER

SCALE: AS SHOWN

DRAWN BY
CHECKED BY

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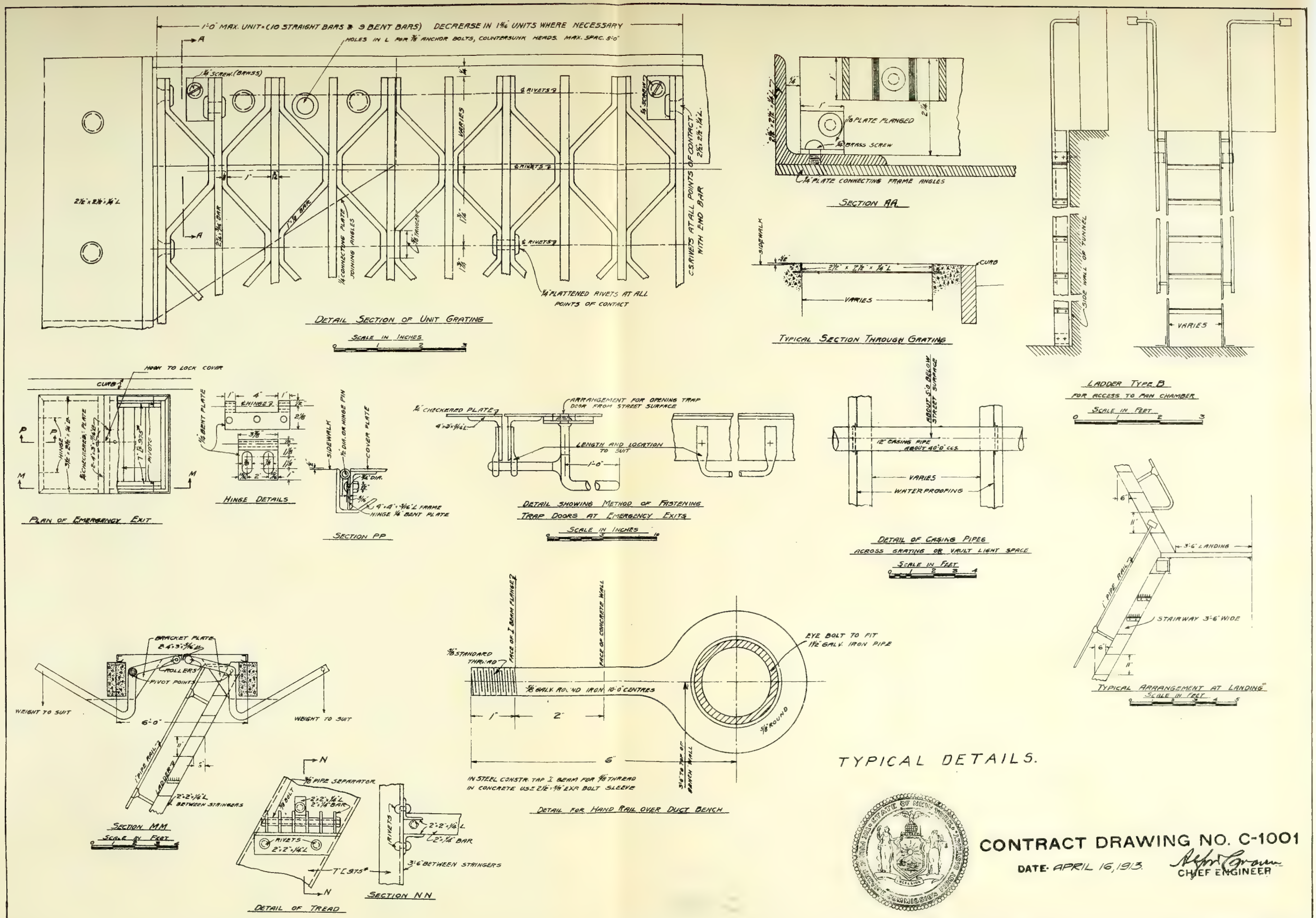
1'-0" MAX. UNIT = (10 STRAIGHT BARS & 9 BENT BARS) DECREASE IN 1 5/16" UNITS WHERE NECESSARY
HOLES IN L FOR 7/8" ANCHOR BOLTS, COUNTERSUNK HEADS. MAX. SPAC. 5'-0"
1 1/4" SCREW (BRASS)
℄ RIVETS
VARIES
2 1/2" x 2 1/2" x 1/4" L
1" x 1/8" BAR
1/4" CONNECTING PLATE JOINING ANGLES
1/4" PLATTENED RIVETS AT ALL POINTS OF CONTACT
C.S. RIVETS AT ALL POINTS OF CONTACT WITH END BAR
DETAIL SECTION OF UNIT GRATING
SCALE IN INCHES
1/8" PLATE FLANGED
1/4" BRASS SCREW
1/4" PLATE CONNECTING FRAME ANGLES
SECTION AA
SIDEWALK
CURB
VARIES
TYPICAL SECTION THROUGH GRATING
SIDE WALL OF TUNNEL
LADDER TYPE B
FOR ACCESS TO FAN CHAMBER
SCALE IN FEET
HOOK TO LOCK COVER
CURB
1/8" CHECKERED PLATE
PIVOTS
PLAN OF EMERGENCY EXIT
1/8" BENT PLATE
HINGE
HINGE DETAILS
SIDEWALK
1/2" DIA. ON HINGE PIN
COVER PLATE
9" x 4" x 5/16" L FRAME
HINGE 1/8" BENT PLATE
SECTION PP
1/8" CHECKERED PLATE
ARRANGEMENT FOR OPENING TRAP DOOR FROM STREET SURFACE
LENGTH AND LOCATION TO SUIT
DETAIL SHOWING METHOD OF FASTENING TRAP DOORS AT EMERGENCY EXITS
SCALE IN INCHES
ABOUT 5'-0" BELOW STREET SURFACE
12" CASING PIPE ABOUT 40'-0" LGS.
VARIES
WATERPROOFING
DETAIL OF CASING PIPES
ACROSS GRATING OR VAULT LIGHT SPACE
SCALE IN FEET
3'-6" LANDING
1" PIPE RAIL
STAIRWAY 3'-6" WIDE
TYPICAL ARRANGEMENT AT LANDING
SCALE IN FEET
BRACKET PLATE
ROLLERS
PIVOT POINTS
WEIGHT TO SUIT
WEIGHT TO SUIT
6'-0"
1" PIPE RAIL
LADDER
2" x 2" x 1/4" L BETWEEN STRINGERS
SECTION MM
SCALE IN FEET
7/8" PIPE SEPARATOR
7/8" BOLT
2" x 2" x 1/4" L
2" x 1/4" BAR
RIVETS
2" x 2" x 1/4" L
7" [9.75#
DETAIL OF TREAD
RIVETS
2" x 2" x 1/4" L
2" x 1/4" BAR
3'-6" BETWEEN STRINGERS
SECTION NN
7/8" STANDARD THREAD
FACE OF I BEAM FLANGE
FACE OF CONCRETE WALL
7/8" GALV. ROUND IRON 10'-0" CENTRES
EYE BOLT TO FIT 1 1/2" GALV. IRON PIPE
7/8" ROUND
3'-6" TO TOP OF BENCH WALL
IN STEEL CONSTR. TAP I BEAM FOR 7/8" THREAD
IN CONCRETE USE 2 1/2" x 5/16" EXP. BOLT SLEEVE
DETAIL FOR HAND RAIL OVER DUCT BENCH
TYPICAL DETAILS.
CONTRACT DRAWING NO. C-1001
DATE APRIL 16, 1913.
CHIEF ENGINEER
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